

RAILWAY

TRACK and STRUCTURES

October 1955

One of Five Specialized Railway Age Publications

HAVE BRUSH CLEARING COSTS CLIMBED TO PROHIBITIVE LEVELS?

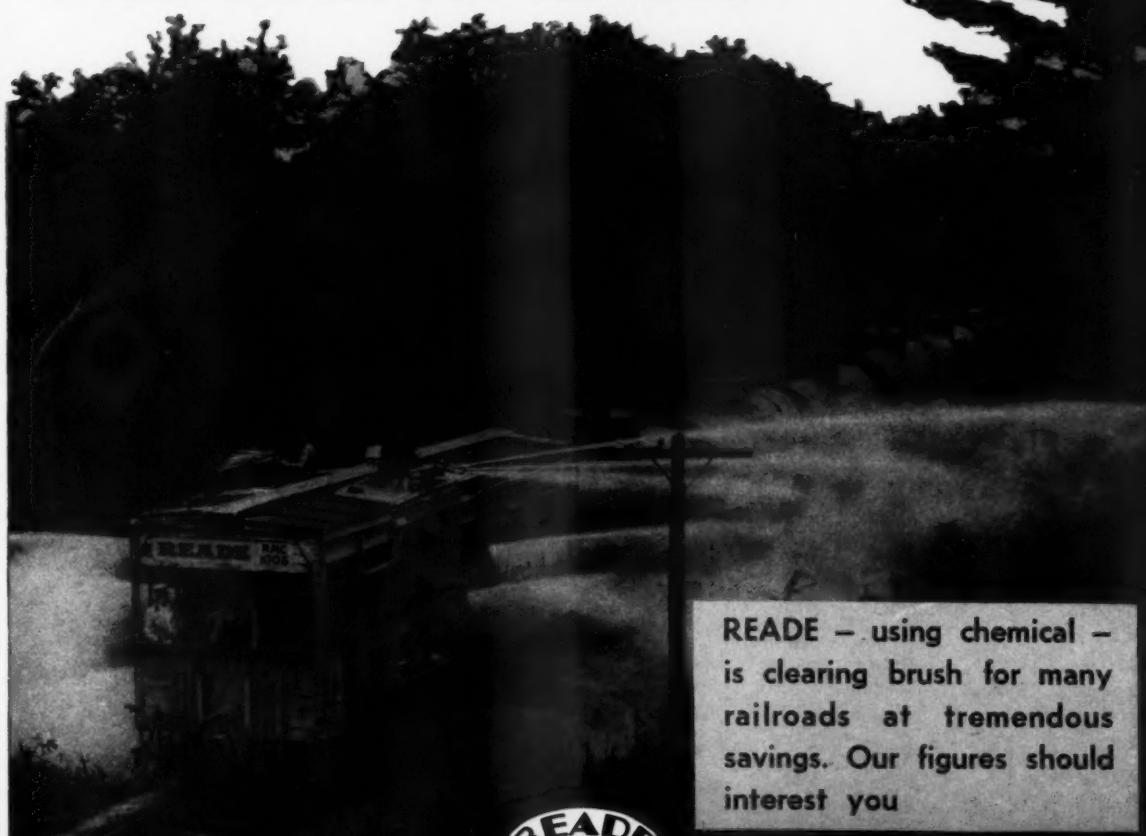
This Issue:

Record Floods
to Eastern Roads

Invention Report;
admasters' and
E&B Associations

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page 35

FORMERLY
Engineering and
Maintenance



READE — using chemical —
is clearing brush for many
railroads at tremendous
savings. Our figures should
interest you



READE MANUFACTURING COMPANY, INC.

JERSEY CITY 2, N. J.

WORKS: JERSEY CITY • CHICAGO • KANSAS CITY • MINNEAPOLIS

BIRMINGHAM • STOCKTON



KERSHAW JACKALL



KERSHAW TRACK BROOM



KERSHAW BALLAST REGULATOR, SCARIFIER AND PLOW

FOR *your* SURFACING GANG

The trackwork machines shown on this page were developed by Kershaw Manufacturing Company for use in your surfacing gang. Here's what they will do:

The Kershaw Ballast Regulator, Scarifier and Plow, requiring only an operator and helper, will scarify, break mud pockets and plow old ballast away from tie ends. After the ballast is unloaded from your ballast cars, it will place and distribute the ballast ahead of the tampers.

The Kershaw Jackall, using an operator, helper and assistant foreman, will raise the track and tamp the adjacent tie ready for the multiple tamper.

The Kershaw Track Broom will sweep and remove loose ballast from between the rails, placing it on the shoulder, and also will complete the track to your own special ballast section without the use of shovels or brooms.

The Ballast Regulator then comes back to regulate, shape and finish the ballast shoulder.

Try them in your surfacing gangs!

Recognize This Symbol of Leadership

KERSHAW
MANUFACTURING CO. INC.
MONTGOMERY  ALABAMA



Let this Friendly Flame keep your switches snow and ice-free

When snow starts falling you'll welcome the dependable orange flame of the Winter King Switch Heater. Even in gusty winds the shielded flame keeps burning, furnishing constant heat to melt the snow as it falls.

This compact little unit fits snugly between the ties and under the rails. It is easily handled, easily adjusted for flame-height, easily refilled even while it's burning. The fuel chamber holds 1½ gals, usually enough for nine to fifteen hours of operation. During severe storms, however, you may find it wise to check it every four or five hours. Other than refilling, the Winter King asks no further attention.

Now is a good time to decide what your switch-heater needs are going to be during the coming winter. Winter Kings should be set out on location in a few weeks: three to a side for 10-ft switches, four for 16½-footers, and proportionately more for the longer ones. Center the opening between stock rail and point, and you'll be set for the season's first storm. One man can care for about 100 Winter Kings if they aren't too widely scattered.

Hundreds of thousands of Winter Kings will be pitting their friendly flames against the snow and ice this winter. How about arranging now to talk with a Bethlehem man about Winter Kings? Just drop a line or put in a phone call to the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

*On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation*

WINTER KING SWITCH HEATERS



Published monthly by Simmons-Boardman Publishing Corporation, Emmett Street, Bristol, Connecticut, with editorial and executive offices at 79 West Monroe Street, Chicago 3, Illinois; 30 Church Street, New York 7, New York. Subscription prices: to railroad employees only in the United States and Possessions, and Canada, one year \$2.00; \$3.00 for two years. Single copy 50 cents. Entered as second class matter at the Post Office at Bristol, Conn., November 26, 1954, under act of March 3, 1879. Volume 51, No. 10.



The reason is straight and simple!

Railroad men . . . those in charge of road maintenance . . . insist on Homelite Dual Purpose Generators because the Homelite Dual Purpose Generator is *the* generator that really fills the bill.

Small and compact . . . carryable by one or two men . . . a Homelite is easy to get on the job anywhere on the line. And on the job, it gives you the power to operate

Why Railroad Men Insist on **HOMELITE** Dual Purpose **GENERATORS**

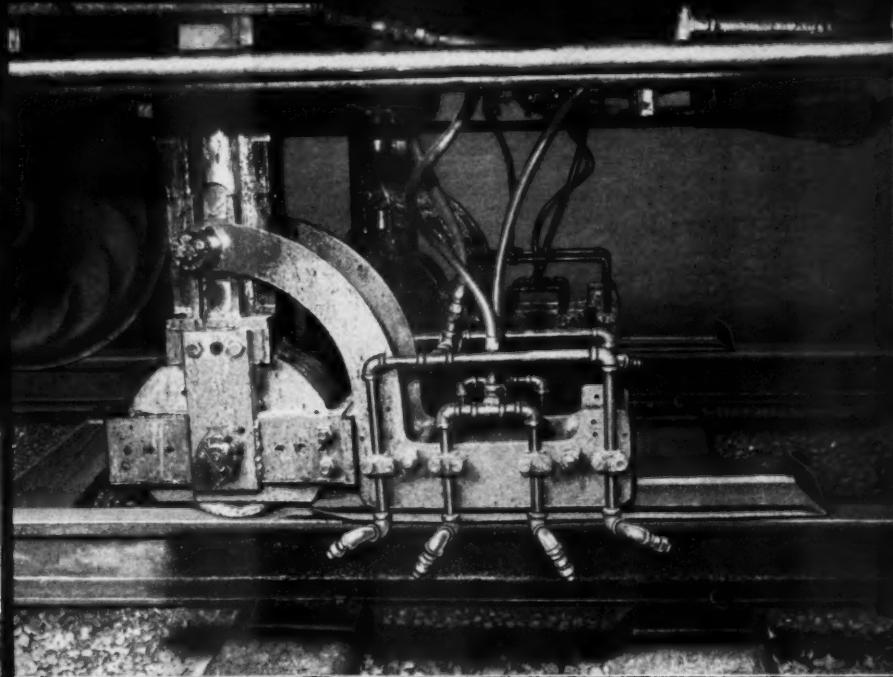
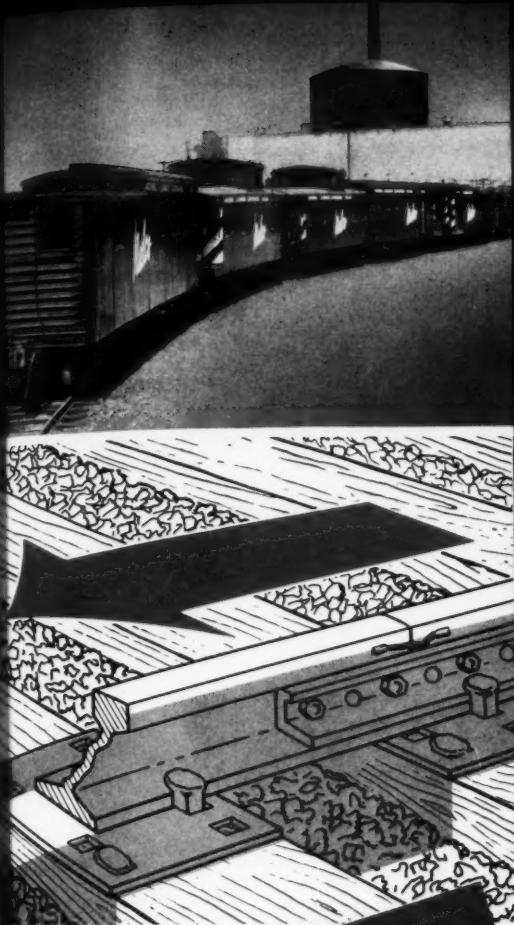
not only standard universal hand tools and floodlights but modern high cycle tools as well.

That's right, both standard and high cycle power from the one gasoline engine driven Homelite . . . power to operate any power hand tool in the kit.

Why not ask for a free demonstration. See how Homelite Dual Purpose Generators can save time, manpower and money for you. Write today.

Manufacturers of Homelite
Carryable Pumps • Generators
Blowers • Chain Saws

PERFORMANCE • DEPENDABILITY
POWER • SERVICE
HOMELITE
CORPORATION
210 RIVERDALE AVENUE • PORT CHESTER, N.Y.
Canadian Distributors: Terry Machinery Co., Ltd., Toronto, Montreal, Vancouver, Ottawa.



• (Top) Nalco Spray Cars operate at front of work train, with expert crew in charge. You furnish only the work train and crew.

• (Left) Arrow shows direction of Nalco Spray Car travel. Coverage of both receding and approaching surfaces is complete.

• (Above) Unique control devices assure complete, uniform Nalco coverage regardless of variations in gauge and elevation. Shield protects running surface of rail.

Nalco
SERVICE

Nalco is the superior asphalt-base coating that really protects against corrosion.

Nalco Spray Cars cover up to 140 miles per day.

Uniform spray pattern . . . from mid-point of outer edge . . . from head to outer edge of tie plate.

STOPS CORROSION of RAIL and FASTENINGS

Here is how you can gain real protection for the large investment your road has in rail and rail fastenings. Schedule now for the fast, efficient—and economical Nalco anti-corrosion treatment!

Aboard Nalco Spray Cars equipped with precision spray machines, experienced operators spread the tough, long-lasting Nalco on rail, tie plates, spikes, bolt heads, angle bars and anchors.

All this at a cost that varies little from the cost of manually painting angle bars alone.

If you would like further information—and an early application date, call your Nalco Representative or write direct.

NATIONAL ALUMINATE CORPORATION
SPRAY SERVICES DEPARTMENT

6196 West 66th Place
Chicago 38, Illinois

P. O. Box 5444
Huntington, West Virginia

In Canada: Alchem Limited, Burlington, Ontario

ANOTHER

Nalco®

SERVICE . Serving Railroads through Practical Applied Science



THE NEW D7, D8 and D9

here's what they can mean on your job

The new 286-HP CAT* D9 Tractor

Choice of torque converter or oil clutch drive. First track-type tractor with Turbocharger. Completely new 286-HP engine. "Live-shaft" drive for rear-mounted equipment. Many other important features.

The new 191-HP D8

With torque converter (Series D). With exclusive oil clutch drive (Series E). Completely new 191-HP engine. "Live-shaft" drive for rear-mounted equipment independent of flywheel clutch. New easy-working controls. Many other improvements.

The new 128-HP D7 Series C

Gear-type balancer gives six-cylinder smoothness. New 128-HP engine. Drawbar pull now 28,700 lb. maximum. New starting engine for simpler, easier operation. Track shoes hardened by "water quench" process. And many other important advances.

The year's biggest news on tracks: Caterpillar's three great new Diesel Tractors.

They're big news because they give you greater power and better performance than ever before.

The D9 and D8, for example, give you your choice of torque converter or exclusive oil clutch drive so you can best match your machine to your own job requirements.

All three give you features like one-piece frame-steering clutch case assemblies, and track shoes specially hardened by a new "water quench" process which means longer shoe life.

All three are easier to operate, with simpler, more powerful starting engines, easier working controls and other improvements.

They're easier to service, too; an exclusive trouble-free oil clutch, separately removable power train components and a fuel system that needs no adjustments in the field are only three of many reasons why.

Better be sure you get *all* the news about the new D7, D8 and D9. Call your Caterpillar Dealer today. Or mail the coupon below.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

MAIL TODAY!

CATERPILLAR TRACTOR CO., Peoria, Illinois, U.S.A.

I'd like *all* the big news about the new D7, D8 and D9.

Name

Company

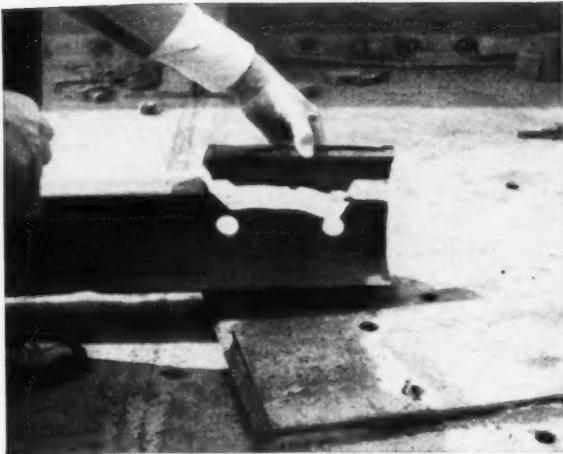
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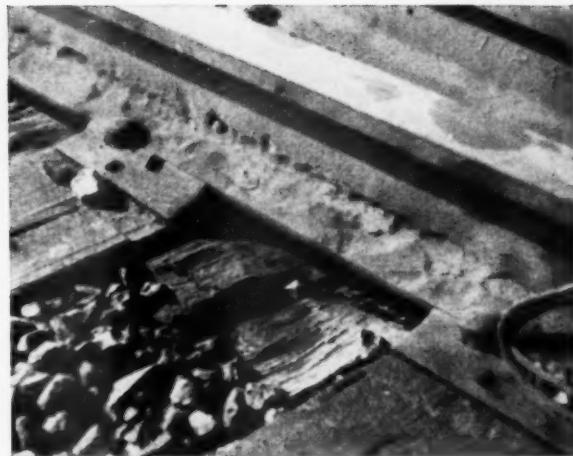
CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

THE NEW D9, D8 AND D7
—EXAMPLES OF CATERPILLAR
LEADERSHIP IN ACTION



Corrosion fatigue caused this rail end failure. NO-OX-ID prevents these hazards.



Rail base eaten away by brine drippings. NO-OX-ID protective coatings prevent this deterioration.



Steel bridges damaged by rust cost money. NO-OX-ID's long-life protection prevents costly corrosion.



Rusty gauge rods are difficult to adjust. NO-OX-ID stops corrosion...makes adjustment easy for years to come.

NO-OX-ID PROTECTS...NO-OX-ID SAVES

Corrosion takes its toll wherever steel is used. Replacing rust-ruined trackage, signal equipment, bridge and overpass steel members is expensive and unnecessary.

Many leading railroads rely on Dearborn NO-OX-ID to cut down materials and maintenance costs wherever steel is exposed. Consult your Dearborn Field Engineer. His broad railroad experience, plus Dearborn's extensive research and laboratory facilities, can save you important money. It pays to investigate.



NO-OX-ID is different! It protects both mechanically and chemically.

Write for Dearborn NO-OX-ID Bulletins 3007-3009-A for complete information.

Dearborn Chemical Company
Dept. RTS, Merchandise Mart Plaza,
Chicago 54, Ill.

Gentlemen:

Please send me NO-OX-ID Bulletins 3007 and 3009-A.
 Have a Dearborn Field Engineer call.

Name..... Title.....

Railroad.....

Address.....

City..... Zone..... State.....

Dearborn NO-OX-ID®
AN APPLICATION FOR EVERY RAILROAD NEED



Johns-Manville now announces

Aquadam

asbestos smooth-surfaced

Built-Up Roofs

for deck inclines from dead level to $\frac{1}{2}$ " per foot

The new Johns-Manville Aquadam asbestos smooth-surfaced built-up roof has been especially designed to give the best possible protection to a building and its contents.

The Aquadam Asbestos Smooth-Surfaced Roof Specification, like the recently announced J-M Aquadam Slag-Surfaced Specification, owes its superiority to Aquadam—a bituminous asphalt cementing agent developed exclusively by Johns-Manville and employed in the application of the roofing felts.

J-M Aquadam provides these important advantages

- greater weather resistance
- greater resistance to cracking
- improved self-healing properties
- greater kettle stability
- greater adhesion
- stronger bond
- greater resistance to water
- excellent uniformity

In the Aquadam Asbestos Smooth-Surfaced Roof Specification all the qualities of Aquadam are combined with the time-proven advantages of asbestos felts in smooth-surfaced built-up roof construction.

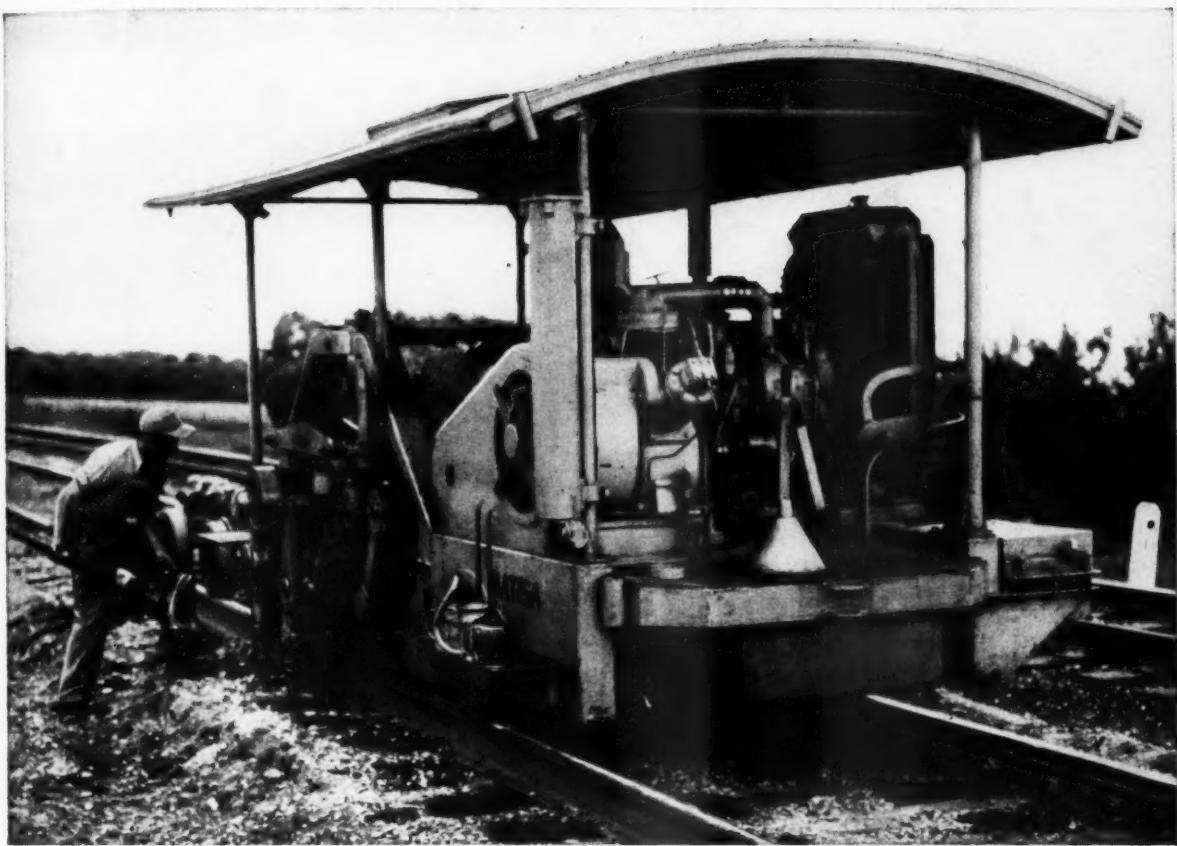
For complete information about Aquadam Built-Up Roofs... and its advantages for railroad use, get in touch with your Johns-Manville Transportation Representative or write to Johns-Manville, Box 60, New York 16, New York.

See "Meet the Press" on NBC-TV,
sponsored on alternate Sundays by Johns-Manville



Johns-Manville

**97 YEARS OF SERVICE
TO TRANSPORTATION**



This ballast cleaning machine is one of many different types of track maintenance equipment being lubricated with Esso Multi-Purpose Grease.

Esso Multi-Purpose Grease simplifies Track and Machinery Maintenance

THE WIDE ACCEPTANCE of Esso Multi-Purpose Grease is due to these important reasons:

1 *It eliminates the need for a variety of greases. ONE grease serves many purposes, preventing the application of the wrong grease and possible damage to machines.*

2 *It is easier to protect a single container of Esso Multi-Purpose Grease from contamination than several partially empty special-purpose drums.*

3 *Storage and handling problems are reduced to a minimum resulting in additional economy.*

Esso Multi-Purpose Grease is ideally suited for maintenance-of-way equipment such as ballast cleaners, tampers, cribbers, screeners and many other pieces of machinery, including automotive and construction equipment.

ESSO OFFERS A COMPLETE LINE OF DEPENDABLE RAILROAD PRODUCTS

Readily available throughout the Esso Marketing Territory are these high quality railroad products . . . famous for outstanding performance on the job . . . backed by continual testing on the road and in the lab.

*Esso Gasolines
*Diesel Fuels
ESSO ANDOK Lubricants—versatile greases
ARACAR—journal box oils
ARA PEN—brake cylinder lubricant
*ESSO XP Compound—hypoid gear lubricant

*ESSOLUBE HD—Crankcase Oils
DIOL RD—Diesel lube oil
COBLAX—tractor motor gear lube
*VARSOL—Stoddard Solvent
SOLVESSO—Aromatic solvent
*ESSO Weed Killer
ESSO Hotbox Compound

*AROX—pneumatic tool lube
*ESSTIC—Hydraulic Oil
*Asphalt
*Cutting Oils
*Rail Joint Compounds
*Signal Department Products
*RUST-BAN—corrosion preventive

*Denotes product used for maintenance-of-way equipment



RAILROAD PRODUCTS

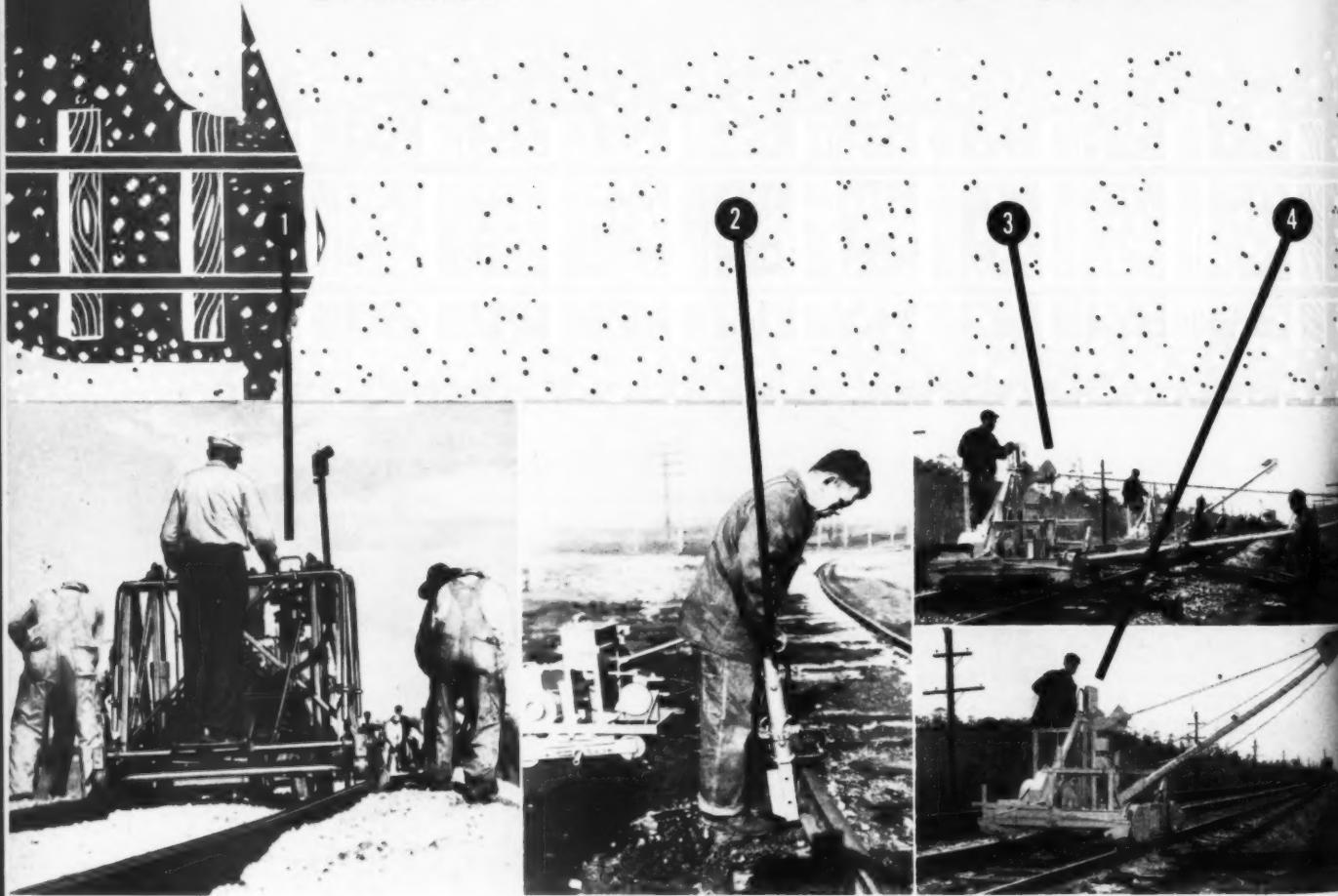
SOLD IN: Maine, N. H., Vt., Mass., R. I., Conn., N. Y., N. J., Pa., Del., Md., D. C., Va., W. Va., N. C., S. C., Tenn., Ark., La.

ESSO STANDARD OIL COMPANY — Boston, Mass. — Pelham, N. Y. — Elizabeth, N. J. — Bala-Cynwyd, Pa. — Baltimore, Md. — Richmond, Va. — Charlotte, N. C. — Columbia, S. C. — Memphis, Tenn. — New Orleans, La.

PUT THESE "Mechanical Muscles" in your Raising and Renewal Operations



© 1955, Nordberg Mfg. Co.



1 NORDBERG POWER JACK starts raising operation. Lifting is accomplished by hydraulic rams, and alignment is maintained even when making high lifts. Speed, accuracy and easy handling are prime advantages of this machine . . .

2 Next comes the NORDBERG HYDRAULIC SPIKE PULLER, a simple, versatile machine that quickly and economically pulls spikes on either rail . . . followed by . . .

3 The NORDBERG GANDY, here being used to quickly pull old ties for replacement . . .

4 Second GANDY in this gang is used to save time in rapidly inserting new ties . . . another example of the versatility of this self-propelled machine.

NORDBERG

"Mechanical Muscles"® to work

Line and Tie Renewal Gangs

The Nordberg "Mechanical Muscles" shown here at work on some of the Nation's leading railroads, have been designed, built, and proved in use with the cooperation of track maintenance men—and typify the continuing research and development made by Nordberg to provide the ultimate in modern maintenance machines for modern railroads.

Other Cost-Cutting Nordberg Mechanical Muscles:
ADZING MACHINE • BALLAST ROUTER • POWER JACK • CRIBEX® • BALLASTEX® • MECHANICAL SPIKE PULLERS • TIE DRILL • SCREENEX® RAIL DRILL • RAIL GRINDERS • TRACK SHIFTER • DSL® YARD CLEANER • DUN-RITE® GAGING MACHINE • POWER WRENCH

Call or write for further information and literature.

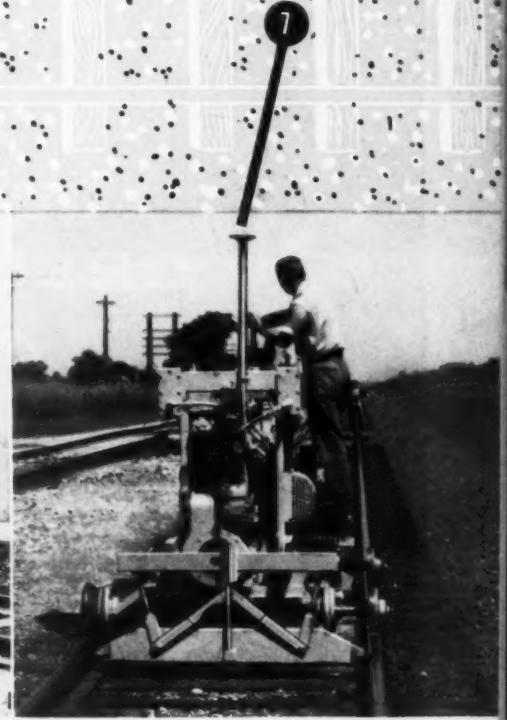
NORDBERG MFG. CO., Milwaukee, Wisconsin



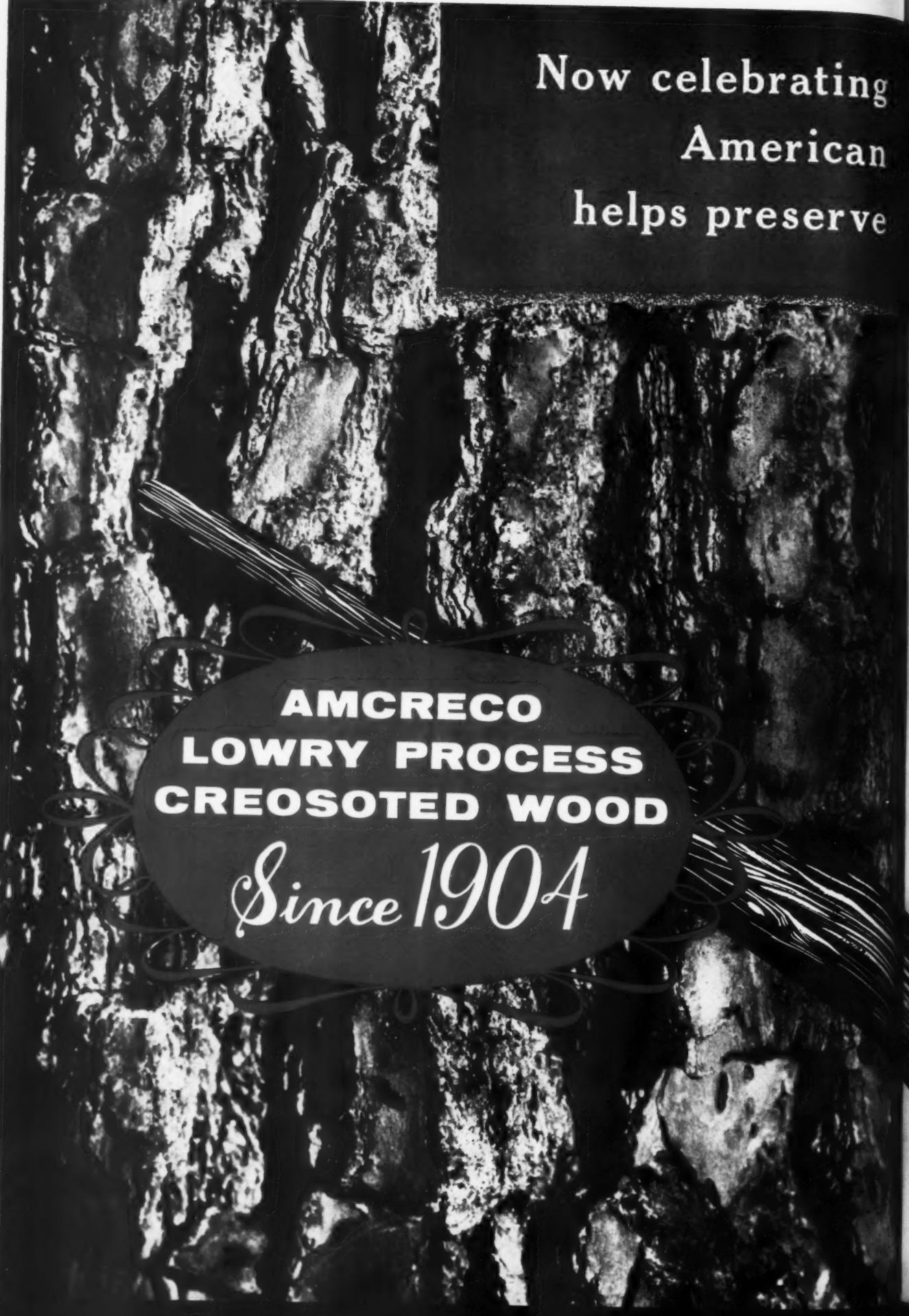
5 Here, the NORDBERG SPIKE HAMMER takes over to drive spikes straight and to correct depth . . . new special carriage permits spiking of both tie ends with one spike hammer.



6 Next comes the NORDBERG AUTOMATIC GANG TAMPER . . . operated by one man, this machine assures uniform quality tamping of every tie, every time, in any ballast.



7 Final machine in this gang is the NORDBERG TRAKLINER . . . a self-propelled machine that assures a faster, more accurate track lining job . . . and one man and the machine here do the work of 14 men or more.



Now celebrating
American
helps preserve

**AMCRECO
LOWRY PROCESS
CREOSOTED WOOD**

Since 1904

its Fiftieth Anniversary, Creosoting Company an American Heritage...

... our Vital Forest Lands

At one time, more than half our country was covered with trees useful for construction material. And it is said, that without this abundant supply of wood, our country would yet be much less developed. Railroads for example, which were a principal factor in the development of our country, could not have been built with such outstanding speed if it had not been for a readily available timber supply.

The time came, however, when the supply of timber was not so readily forthcoming and able men, among them Gifford Pinchot, became pessimistic as to the future of our forests. Around 1900, it was predicted that our timber lands would be exhausted in another 25 years if we continued as we were.

Then, just when the picture looked blackest, Mr. C. B. Lowry introduced his Empty Cell Creosoting process and the modern era of wood preservation was born. It has been estimated that the modern wood preserving industry, founded by Lowry and pioneered by the American Creosoting Company, has saved the nation the equivalent of 500 million acres of forest in the past 50 years.

What does this mean to the nation and to you? It means that we are no longer faced with the prospect of becoming a treeless nation. It means

that our once teeming timberlands have had a chance to recover from the abuses of the past. Wood preservation, along with the development of scientific forestry and use of substitutes for wood as a construction material, have turned the tide against the forces of forest exhaustion.

In addition to helping save a great natural resource, wood treatment means one other thing to you. It means longer lasting service life for every piece of wood that you use. For example, wood treated by the American Creosoting Company lasts four, five, even ten times as long as untreated woods. In fact, under many conditions, wood treated by Amcreco can be considered essentially permanent.

Of course there are many different types of treatment processes—some tried and proven—others as yet untried by the big test of time. For that reason, when investing in treated woods, make sure you know their service record before you buy.

Another way to take the gamble out of purchasing is to make Amcreco your one reliable source for longer lasting cross ties, poles, cross arms, pile, plank, conduit and other construction woods. We would appreciate an opportunity to quote on your needs.

This year the United States Forest Service also celebrates its 50th anniversary. We are proud to share our birthday cake with them and to join the nation in thanking them for their invaluable contributions to conservation.

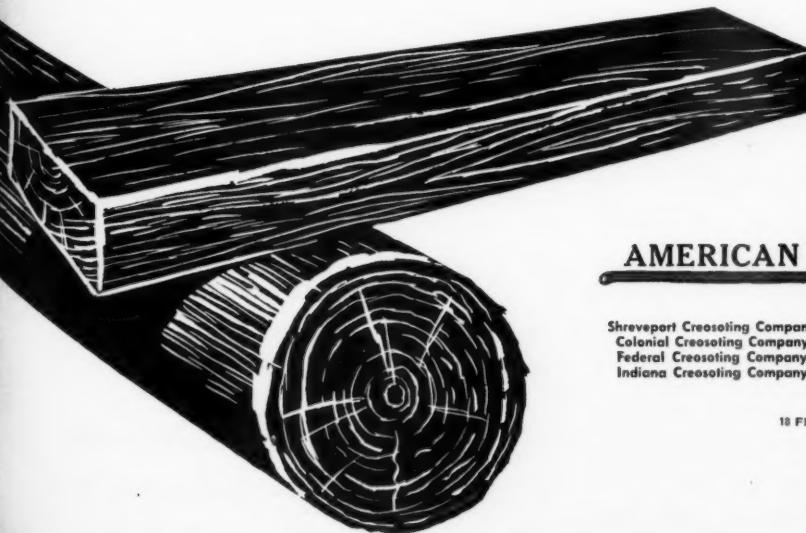
AMERICAN CREOSOTING COMPANY

Shreveport Creosoting Company
Colonial Creosoting Company
Federal Creosoting Company
Indiana Creosoting Company



Georgia Forest Products Company
Gulf States Creosoting Company
Georgia Creosoting Company
Kettle River Company

LOUISVILLE 2, KENTUCKY
18 FIELD SALES OFFICES TO SERVE YOU



YOU'RE CLOSER TO
LINDE THAN YOU THINK

Trade-Mark



New materials, changing structural requirements, and unexpected emergencies create railroad problems that demand skill and experience . . . LINDE's coast to coast organization of engineers, service representatives, and salesmen in the offices shown on this map, stand ready to help you meet all such problems.

Backed by more than 40 years of accumulated know-how, and equipped with unmatched research and engineering facilities to help customers solve metal-working problems, LINDE is helping the nation's railroads to consistently improve production and lower costs.

*These are "PLUS" values you get only from **LINDE***

RAILROAD DEPARTMENT

Linde Air Products Company
 A Division of Union Carbide and Carbon Corporation

30 East 42nd Street  New York 17, N. Y.

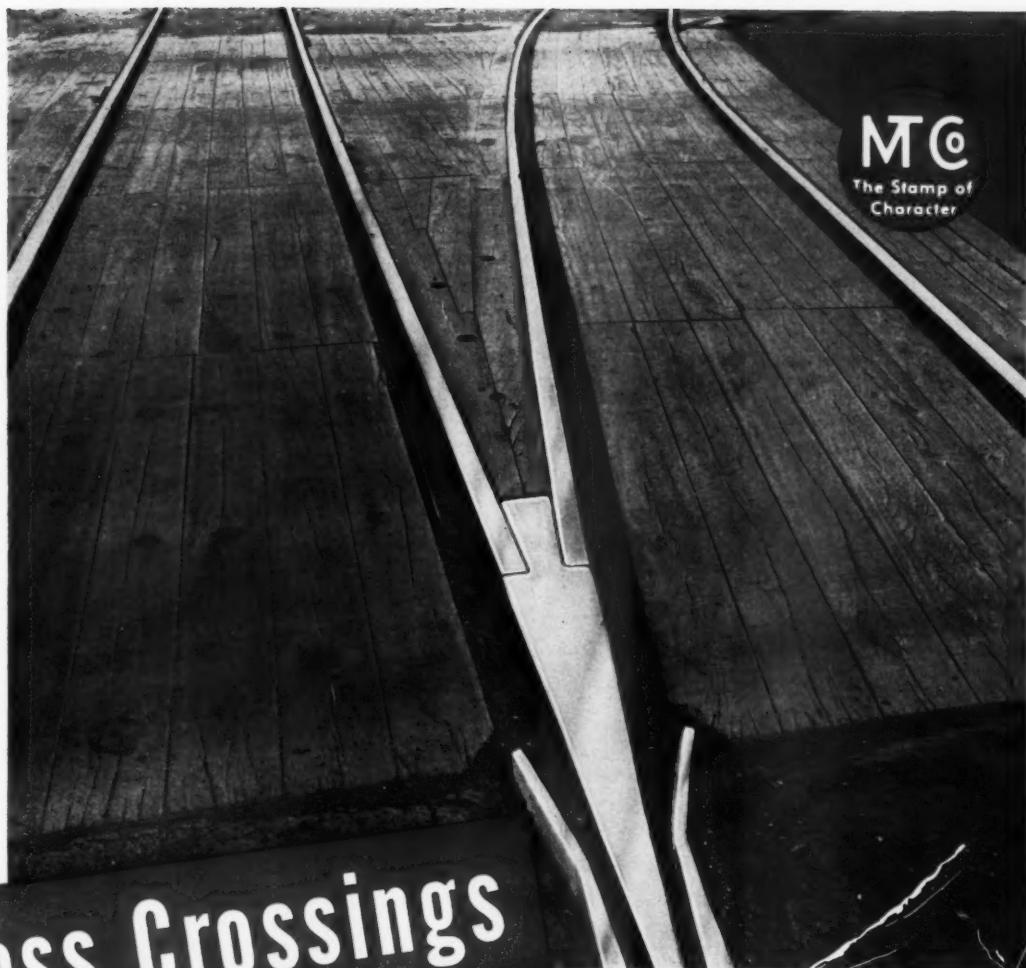
Offices in Other Principal Cities

In Canada: LINDE AIR PRODUCTS COMPANY
 Division of Union Carbide Canada Limited, Toronto
 (formerly Dominion Oxygen Company)

"Linde" and "Oxweld" are registered trade-marks of Union Carbide and Carbon Corporation.

Supplying to railroads the complete line of welding and cutting materials and modern methods furnished for over forty years under the familiar symbol ---





Moss Crossings

**win you handshakes . . .
rather than headaches!**

- Smooth, tightly-locked surface wins public applause.
- Interlocking grain of black gum, toughest of hardwoods, ruggedly resists battering wear and tear.
- Maintenance cut to a minimum through longer service, less patching and track tie-up.
- Highest quality pressure-creosoted timbers render exceptionally long life, safe service.
- Bolt-locked panel construction, quick and economical to install and easy to remove for track work.
- Tailored to fit any angle or curve.

Specify Moss Crossings of Pressure-Creosoted Black Gum. They stand the test of time.



WOOD PRESERVING PLANTS: E. St. Louis, Ill.—Granville, Wis.—Shreveport, La.—Columbus, Miss.



YOU NEED BOTH . . .

ECONOMICAL *Proven* WEED AND BRUSH KILLING SERVICES

Chemical treatment of your *whole* roadway makes good sense—and saves maintenance dollars. Bogle experience has been extensive in both "roadbed" and "right-of-way" applications. We have the right kind of chemical for every job and the know-how that only 30 years plus in the business can give.

Add to this a fleet of fully-equipped, modern spray cars and experienced operating personnel and you have our prescription for a complete, well-integrated weed and brush killing service that meets today's needs at the lowest possible cost per mile.

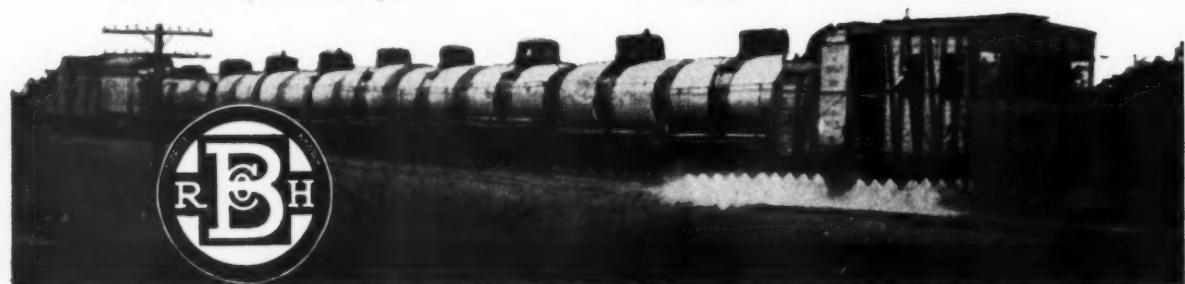
We shall gladly work out a Bogle program with you in the light of your own needs.

THE R. H. BOGLE CO.

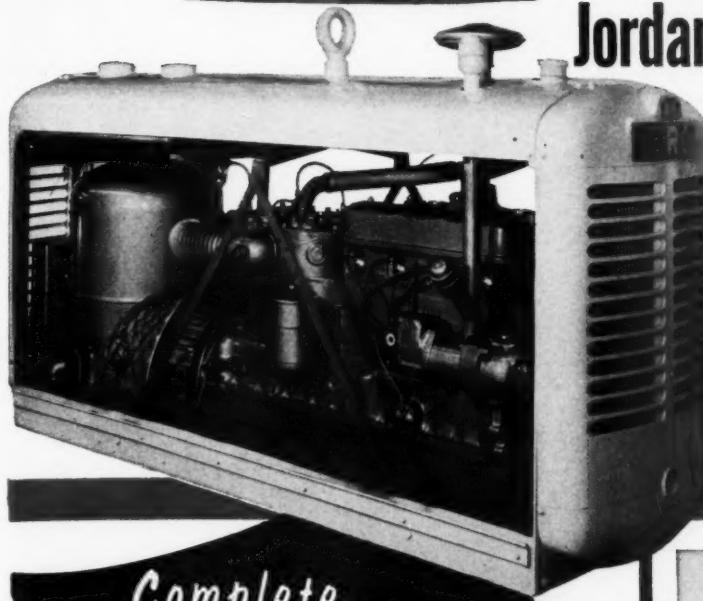
ALEXANDRIA, VA.

Memphis, Tenn.

Complete Weed and Brush Killing Service



Now! a PACKAGED AIR SUPPLY for ANY Jordan Unit--New or Old!



*Complete...
Ready To Install*

**COMPRESSOR,
ENGINE, FITTINGS,
HOSE and VALVES**
*Plus Detailed Installation
Data for YOUR Specific Unit*

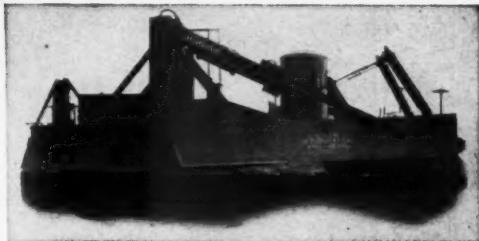
PACKAGE
INCLUDES:

The new Jordan Packaged Air Compressor Unit, by providing a dependable, independent air supply, insures maximum operating efficiency of Jordan Spreaders, Ditchers and Snowplows. In addition, you gain greater flexibility, because any motive power can be used with Jordan equipment, regardless of its air-producing capacity.

We supply everything necessary for the installation, including detailed instructions and drawings for your specific equipment. Your Mechanical Department can make the installation with minimum delay and labor cost.

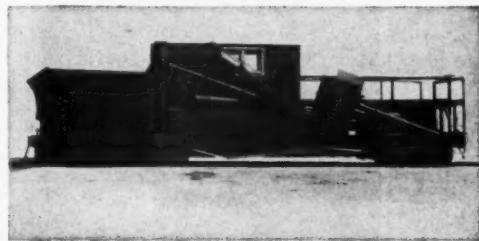
For further details, call or write us, or contact your nearest Le Roi Co. Railroad Representative.

**Supplies correct
air pressure
and volume for
PROPER
OPERATION**



old

Regardless of the age of your Jordan, the new Packaged Air Supply Unit can be installed quickly and easily.



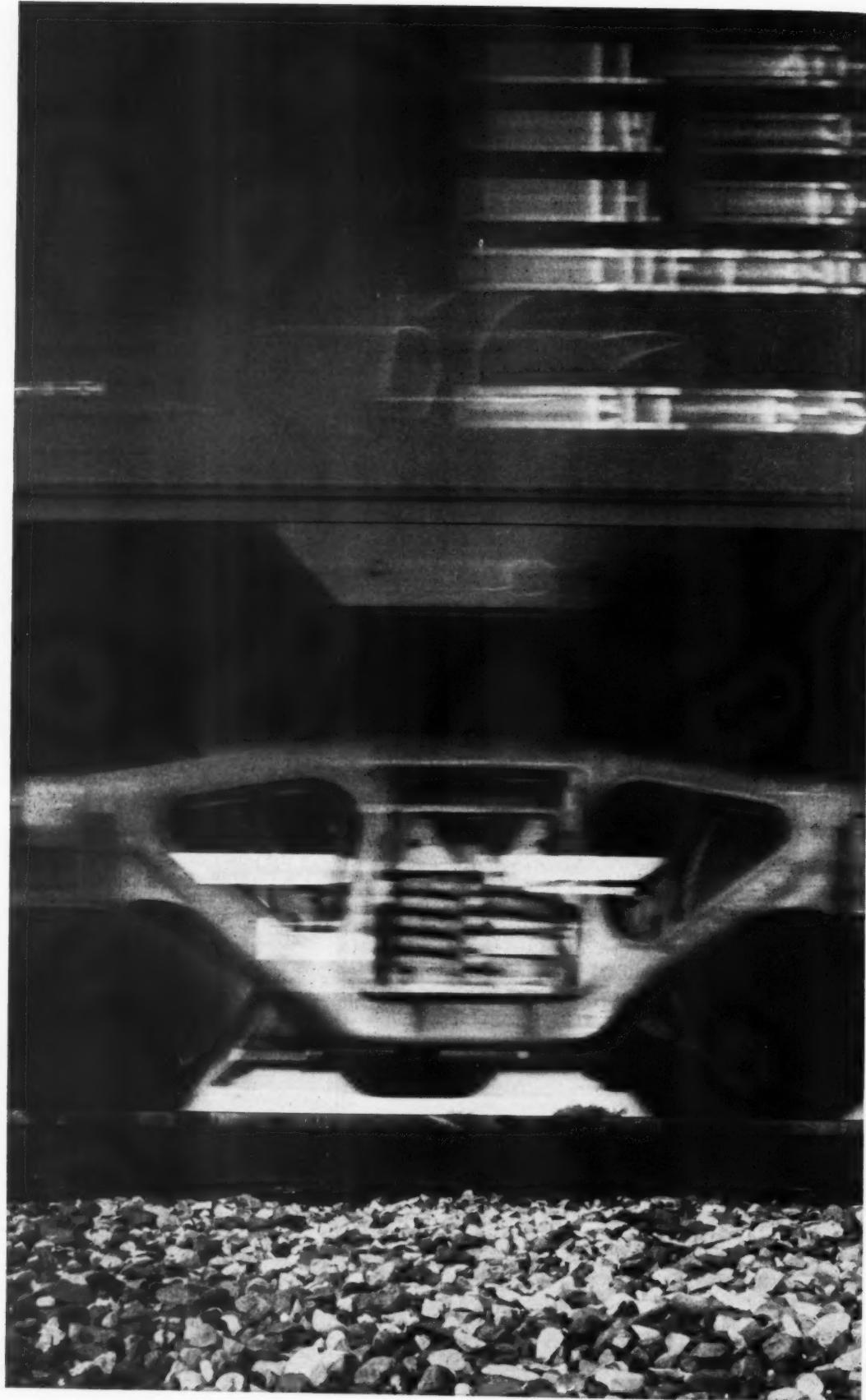
new

Insure maximum performance and utility from newer Jordan Units.

O. F. JORDAN COMPANY

WALTER J. RILEY, CHAIRMAN OF THE BOARD
EAST CHICAGO, INDIANA

Dow



... destination: East, West, North or South

LADING ROLLS

**... over roadbeds
kept grass and weed free
with Dow products**

No churning track when roadbeds are kept clear of grass and weeds with Dow herbicides! To assure smooth rolling for both freight and passenger traffic—Dalapon Sodium Salt 85% teams up with 2-4 Dow Weed Killer, Formula 40 to maintain *clean* ballast and berm. The two products can be combined to control grasses and broadleaved weeds in roadbeds.

For brush-free right-of-ways—neat-looking and eco-

nomical to maintain—a low-cost spraying program should be built around Esteron® Brush Killer, Esteron 245 and Esteron Ten-Ten.* Write for information on how these five Dow vegetation control products can help you keep your service up and maintenance costs down. Technical service and assistance are yours on request. THE DOW CHEMICAL COMPANY, Agricultural Chemical Sales Department, Midland, Michigan.

*Trade-mark of The Dow Chemical Company.

you can depend on DOW AGRICULTURAL CHEMICALS



FOR CLASS 1 PERFORMANCE, SPECIFY

Lewis

Sealtite

railroad fasteners



Sealtite
Hook Bolt



Sealtite
Guard Rail Bolt



Sealtite
Lag Screw



Sealtite
Timber Bolt



*One of many leading railroads using Lewis Sealtite products

The nation's great railroads use Lewis Sealtite fasteners. Accurately engineered, designed to do a better job, Sealtite products are tough, durable, made of finest grade metals for heavy duty. They meet the most exacting specifications.

More than 20 years of manufacturing experience have established Sealtite's top quality in the industry. Such famous Sealtite features as the patented fins, for better seating, Sealtite's accurate threading, for easy installation, and many others, have given Lewis Sealtite products a "Class 1" reputation in the field.

The next time you specify fasteners, specify Lewis Sealtite, a complete line of first grade fasteners for America's leading railroads.

All Sealtite products are available in HOT-DIP GALVANIZED, SEALED-IN-ZINC finish, which stops rust and corrosion. Tests prove that the molten zinc bath gives Double-Life, greater economy through fewer replacements.

*Serving 85% of America's
Class 1 Railroads*

See your Lewis representative, or contact
factory for samples, prices, full details.

All products are manufactured
in the U.S.A. to A.S.T.M. specifications

Lewis

BOLT & NUT COMPANY
504 Malcolm Ave. S. E.
Minneapolis 14, Minnesota



Sealtite
Car Bolt



Sealtite
Large-Head
Car Bolt

Sealtite
Slotted Head
Car Bolt



Sealtite
Washer Nut

Sealtite Bolts available with Loktite Nut #2, washer nut, or std. sq. and hex. nuts.

RUST-OLEUM

STOPS RUST!

**Cut Your Maintenance Costs On
Signalling Equipment, Rolling Stock,
Bridges, Towers, Tanks, etc.**

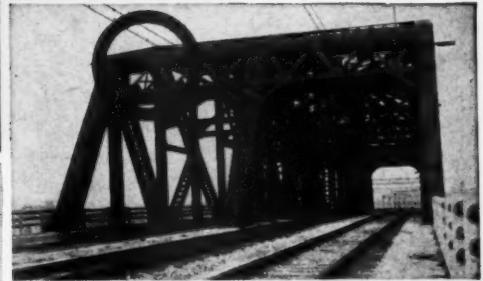
Here's the *practical, sensible* answer to your rust problems! Costly sandblasting or chemical pre-cleaning are not usually required . . . just wire-brush and scrape to remove rust scale and loose particles . . . then apply RUST-OLEUM by brush, dip, or spray over the rusted surface. Dries to a tough, elastic, rust-resisting film that lasts longer applied over rusted areas. So easy to use that one man often does the work of two . . . saves you time, labor, and money. Get the complete story from your RUST-OLEUM Rust Preventive Railroad Specialist today!

RUST-OLEUM CORPORATION
2346 Oakton Street, Evanston, Ill.



Available In All Colors, Aluminum and White

Lasts longer applied directly over rusted surfaces!



Request Your FREE Copy of
The RUST-OLEUM Railroad
Catalog Now!

WOODINGS-VERONA **VERONALLOY** RAILROAD TOOLS

"Feel right" because they are properly balanced

Last long because they are tough and well made

VERONALLOY railroad tools have the features you demand—highest quality alloy steels (heat treated), well-balanced design, carefully ground edges and faces, finest hickory handles. Each tool is checked by Magniglow inspection—and of course, they are made in strict conformity to A.R.E.A. specifications. A few of the more widely-used tools are illustrated here. They are made in all required sizes, types and weights.



PREFERRED BY THE RAILROADS
SINCE BEFORE THE CIVIL WAR !



CHISELS



SLEDGES



SPIKE MAULS



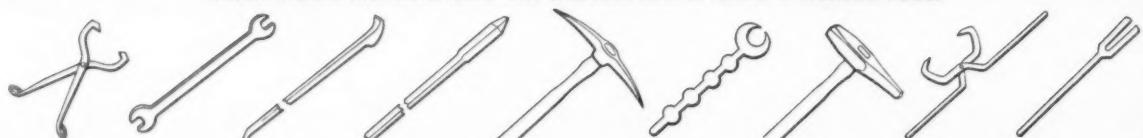
ADZES

Write for catalog
and prices

WOODINGS-VERONA TOOL WORKS

Offices and Plants: VERONA, PA.—Sales Offices: CHICAGO, ST. LOUIS
MAKERS OF RAILROAD TOOLS, RAIL ANCHORS, SPRING WASHERS, NUT LOCKS

SHOWN BELOW ARE ITEMS FROM OUR COMPLETE LINE OF A.R.E.A. RAILROAD TOOLS





Now You Can Spot Tamp ...Quickly and Easily

... the extra power of Le Roi Tractair
lets you do faster, better work

SUPERIOR track — that is, a better road bed — calls for good spot tamping. Le Roi with its redesigned Tractair unit, giving you 125 cfm instead of 105 cfm, makes it easy to tamp this superior way.

You see, Tractair's extra capacity gives a greater margin of reserve air than ever before, in operating four, Cleveland C10T, heavy-duty tie tampers. And Cleveland C10T heavy-blow tampers are easy to handle — have a fast, hard-hitting blow that lets your men do a thorough job of tamping in a much shorter time.

You not only save time and money, but you also get a smoother track — one that will stand up

longer under the heavy, fast trains of today.

And you can use your Le Roi Tractair, a combination 42-hp wheel tractor and 125-cfm compressor, for many other jobs such as: Handling off-season work for B&B, Signal, T&T, and Water Service Departments. Stockpiling ballast, cinders, and other materials. Driving spikes, breaking pavement. Driving moil points for grouting. Ditching, light grading, and mowing.

The new Tractair can help you reduce the cost of your M. of W. jobs. Write to our Railroad Sales Department, 327 South LaSalle Street, Chicago 4, Illinois, or to us for latest literature.

T-38

LE ROI



Division of Westinghouse Air Brake Co.

Milwaukee 14, Wisconsin



PORTABLE AIR COMPRESSORS



TRACTAIR



STATIONARY AIR COMPRESSORS

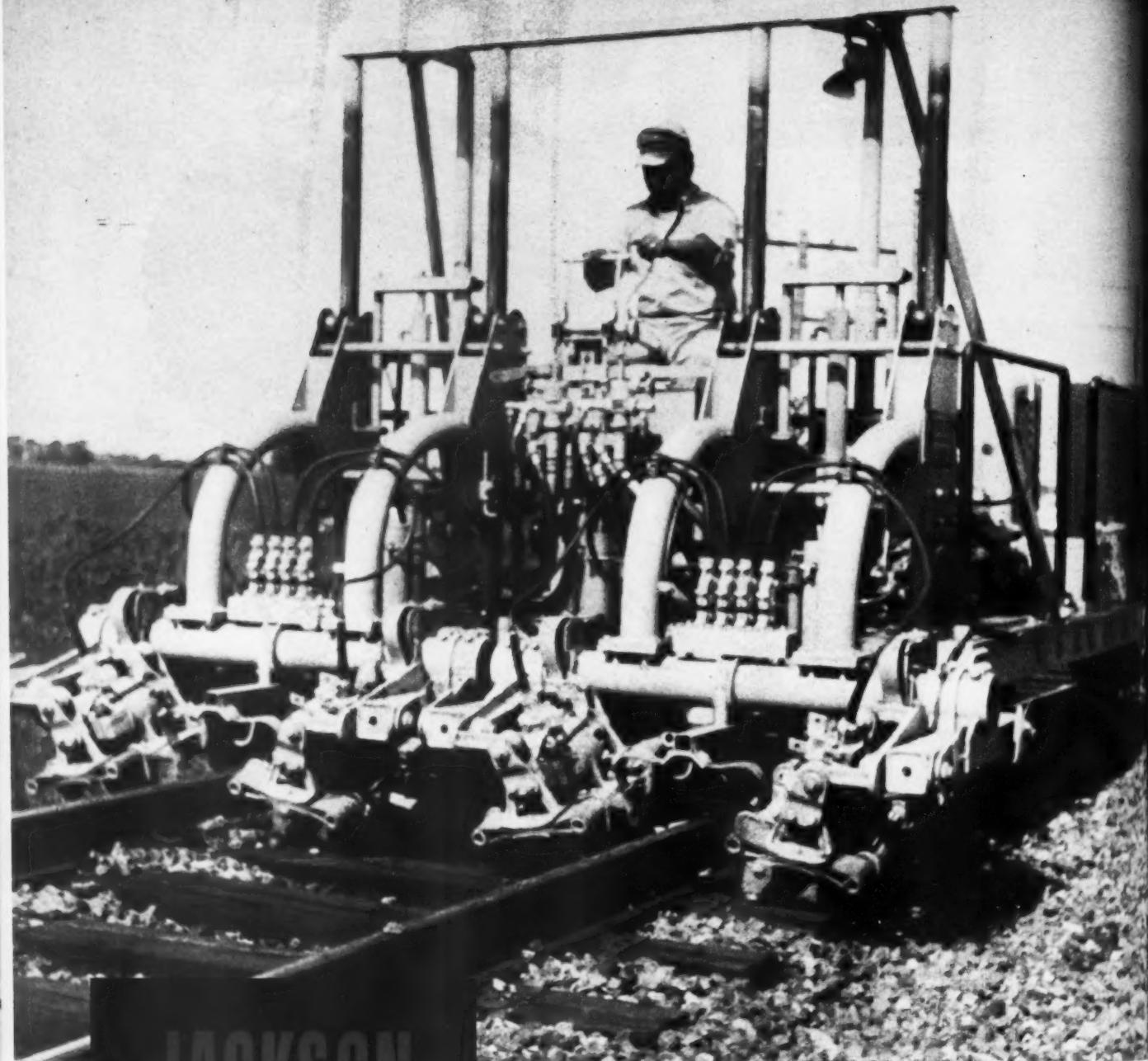


AIR TOOLS



ENGINES

Now-more than ever-your best bet for '56



JACKSON
TRACK
MAINTAINER

The 1956 model, now in production, combines major improvements to provide even greater speed and efficiency of tamping under all conditions . . . improvements such as: Much greater power . . . a highly practical means of directing every bit of vibration to the ballast . . . and other important features . . . all of which increases the already wide margin of superiority of this machine as the best means of both putting up and maintaining track of finest quality. By all means write, wire or phone for complete information concerning the JACKSON TRACK MAINTAINER. You're sure to agree, we believe, that it is by long odds your best bet for '56.

Acquirement plans to suit your needs.

JACKSON · VIBRATORS, INC.
LUDINGTON, MICHIGAN



Report on the MICHIGAN TURBO-DOZER:

New dozer features 27 mph speed, power-tilting bowl, rear-wheel steer

The new $2\frac{3}{4}$ yd. capacity Michigan Turbo-Dozer combines rubber-tired speed and mobility with outstanding traction and power. Its turbocharged diesel engine develops 165 hp, with maximum rimpull of 28,000 lbs.—plenty of power for heavy dozing, push-loading and land clearing. At 27 mph, it runs rings around any dozer on the market!

Power-tilting bowl. A powerful double-acting hydraulic cylinder tilts the bowl back and forth through a 33 degree arc. You can change the angle of the bowl from "dig" to "float" as you travel—work the cutting edge back and forth under stumps and boulders to uproot them. Two 6-inch lift cylinders give you tremendous lifting power and down-pressure—you can raise the cutting edge from $24\frac{1}{4}$ inches below ground level to $43\frac{3}{4}$ inches above.

High flotation tires, oscillating axle. Big 18.00-25 low pressure tires (nearly 7-foot tread) give the Turbo-Dozer excellent ground contact in dry, wet or sandy footing. You can cross railroad tracks or travel along the ties or road bed; you can climb curbs and drive safely on any kind of road surface. On uneven terrain, the steering-drive axle oscillates to keep both rear wheels in firm contact with the ground. With $14\frac{1}{2}$ inches of ground clearance underneath, it's practically impossible to get "hung up."

Full traction while turning. The Turbo-Dozer gives you full tractive effort even in a turn. *All four wheels are always driving*, except when you declutch the rear axle for highway travel. Rear-wheel steering eliminates unnecessary tire wear—you don't brake or drag your inside wheels on a turn. If one

wheel begins to slip, a locking differential automatically applies power to the wheel with the firmest footing.

Power-shifting, 300% torque multiplication. Clark's exclusive power-shift transmission eliminates the conventional engine clutch and foot pedal—the most notorious cause of excessive maintenance and operator fatigue. With two finger-tip levers on the steering column, the operator can instantly shift between High-Low and Forward-Reverse—even when moving in either direction.

The 3-to-1 Clark torque converter gives you a steady power flow, regardless of speed. As the load gets heavier the torque output automatically increases up to 300% at stall speed—gives you the extra torque to plow through the toughest spots. You can't stall the engine, and there's no clutch to slip.

Prove it for yourself. The new Michigan Turbo-Dozer gives you faster cycles and more yardage in every shift—more dollars of profit every day. Ask your local Michigan distributor to prove it, with an on-the-job demonstration; or write direct for detailed specifications. The Turbo-Dozer is available on the low-cost Michigan Lease Plan: no down payment, pay as it produces!

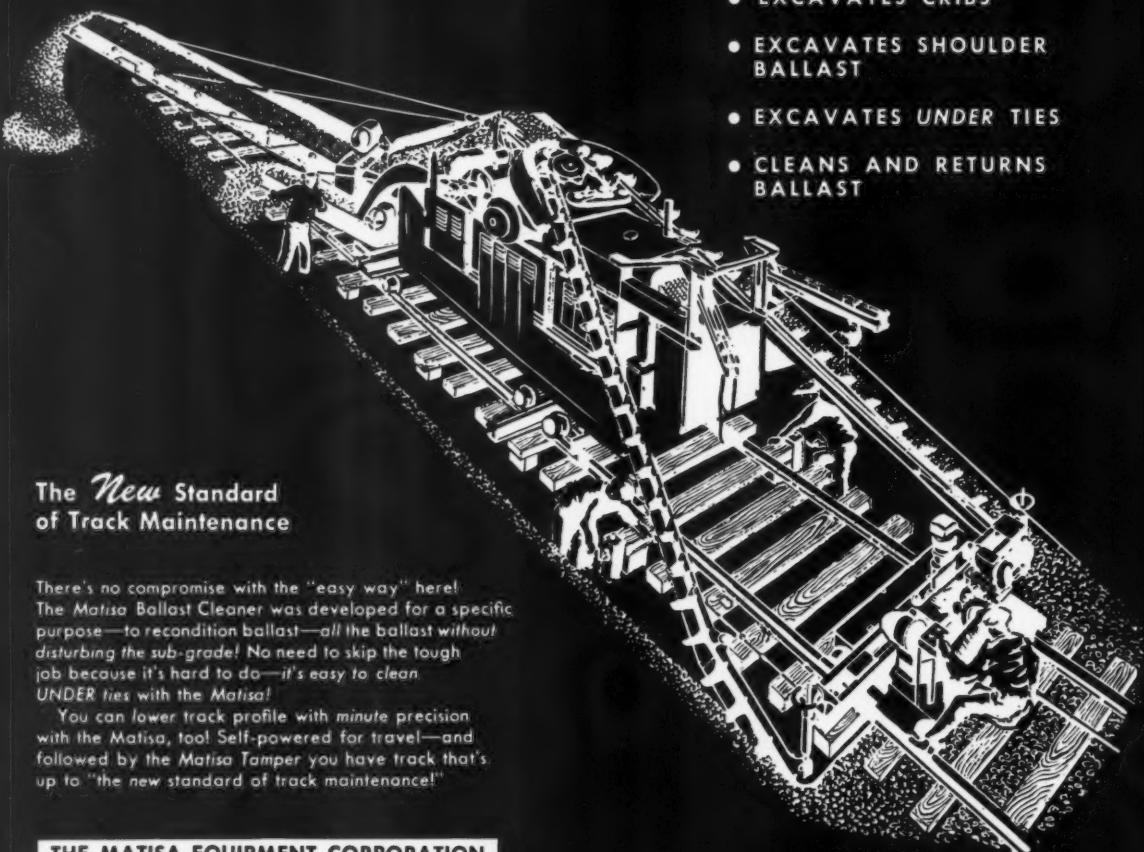
MICHIGAN is a trade-mark of Clark Equipment Co.

**CLARK
EQUIPMENT**

**CLARK EQUIPMENT
COMPANY
Construction Machinery Division
492 Second Street
Benton Harbor 35, Michigan**

ONE *Matisa* DOES ALL FOUR

in ONE operation!



The New Standard of Track Maintenance

There's no compromise with the "easy way" here! The *Matisa* Ballast Cleaner was developed for a specific purpose—to recondition ballast—all the ballast without disturbing the sub-grade! No need to skip the tough job because it's hard to do—it's easy to clean UNDER ties with the *Matisa*!

You can lower track profile with minute precision with the *Matisa*, too! Self-powered for travel—and followed by the *Matisa* Tamper you have track that's up to "the new standard of track maintenance!"

THE MATISA EQUIPMENT CORPORATION
1020 Washington Ave. • Chicago Heights, Ill.

ALL OVER THE WORLD



News Notes

... a resumé of current events throughout the railroad world

RAILWAY

TRACK and STRUCTURES

OCTOBER, 1955

James M. Symes, president of the Pennsylvania, has predicted that the nation's railroads 10 years from now may well be handling in excess of 850 billion ton miles a year. This will be 53 per cent more than the 1954 total.

The U.S. Post Office Department was the railroads' "third best customer" last year, it said. It paid \$307.5 million to 36 Class I roads for transportation of mail, and only coal and lumber among the usual commodity groups yielded more revenue.

Estimated net income of Class I roads in July, after interest and rentals, amounted to \$72 million as compared to \$50 million for July 1954. Net income for this year's first seven months, after interest and rentals, was \$490 million, up \$207 million from 1954's \$283 million.

The Norfolk & Western hump yard at Portsmouth, Ohio has teletyped tape control of the switches. This means that a tape, cut for the entire train, will cause the proper switches to be automatically set to route each car to the selected classification track as it goes over the hump.

A mock-up of a new "Slumbercoach," which the Pullman Company feels has a definite place in today's travel market, is being quietly shown to railroad officers. As a service to the industry, plans for the sleeper-coach will be made available to any interested railroads.

Notice is being served on major carriers that the Order of Railway Conductors & Brakemen wants: (1) A \$3 daily increase in pay for passenger conductors and brakemen; (2) a \$2 daily increase in pay for freight conductors and brakemen; and (3) "adequate daily earnings for conductors and brakemen now laboring on minimum assignments."

"This train will save an industry," said the New York Central in a full-page advertisement in metropolitan newspapers last month. The train is the GM "Aero-train." The ad states that the NYC will put such a train into service between Chicago and Detroit next spring. Meanwhile General Motors has stated that this train and another like it will be released to the Pennsylvania and the NYC for demonstration and tests around November 1.

Continuation of fast amortization for railroad facilities has been recommended to the Office of Defense Transportation by Commissioner Clarke, who handles defense transport matters for the ICC. The recommendation is understood to have been for a temporary period—until the commissioner either confirms or changes it after study of a commission staff survey of transport needs. If ODM should decide to end the program, Mr. Clarke asked that notice be given at least 90 days prior to the closing date.

Taxes on New Jersey's railroads—already around five times higher per mile than the national average—will be trebled or quadrupled if a new system developed by politicians is put into effect. The idea seems to be that railroads (and only railroads) should be taxed on what their facilities would cost if built new at today's prices for labor and materials. (New Jersey has spent \$690 million to build two tax-free turnpikes, but raised a railroad's taxes for planting rose bushes to beautify a station.)



Monotube Foundation Piles...

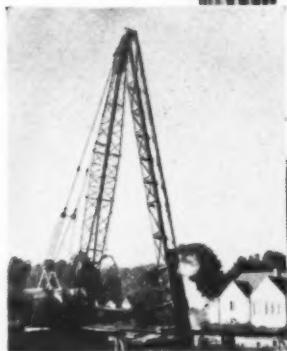
BEST START

for saving time — money — materials

IN today's highly competitive construction business, it's mighty important to invest time, money and materials as wisely as possible. That's why you'll want to learn more about *the best start* when building . . . tapered, fluted steel Monotube foundation piles.

Illustrated on this page are several examples of field work involving Monotube piles. With a fast, single girt weld of telescopic joints, Monotubes can be extended to any required length. Cut-offs are easy too . . . and no waste, as these same cut-offs can be re-used to extend other piles. Light-weight construction plus cold-rolled strength means easier handling and faster pile installation. Tubular design makes inspection before concreting quick and sure.

Mentioned above are only a few of the reasons why more and more foundation jobs are getting off to a good start using Monotube piles. To get *all* the facts, write The Union Metal Manufacturing Company, Canton 5, Ohio. Request Catalog No. 81.



DRIVING



EXTENDING



CUTTING OFF



INSPECTION

UNION METAL

Monotube Foundation Piles

OWNERS REPORT THE DECISIVE DIFFERENCE IN NEW TD-18A Performance



"It can self-load and deliver fastest!" "International TD-18A improvements like the new 300% stronger track frames and cartridge-type roller seals increase production, machine life, and operating ease. As for power, our new TD-18A can self-load the 8-11 cubic yard scraper and deliver fastest of any crawler we ever had." *Here's proof extra traction matches the TD-18's power increase!* G. W. Owen, McDonough, Ga.



"Every load's a payload" "My TD-18A International Drott is built for the operator's comfort. I know, because I'm the operator. It has 360° visibility which no other loader has. Every load is a payload." *No other outfit built gives you the TD-18's combination of power, visibility and responsive controls.* V. S. Steffes, Owner, Earthmoving and Clearing, Batavia, Illinois.



"Operators fight for new TD-18A!" "The TD-18A's were always good—fast, trouble-free performance and low operating cost made me money. The new model TD-18A is stronger and really planned for the man in the seat. It has operators fighting for it." Big, wide, comfortable cushions; hydraulic steering control boosters, and levers, conveniently grouped on the roomy, non-skid deck! *No wonder TD-18A handling ease turns "skinners" into high-producing operators throughout the day!* M. B. McKee, McKee Construction Co., Chickasha, Oklahoma.



"Uranium search toughest of all!" "I'm in the hardest work I know of—building roads into uranium claims, rim-cutting development work. The TD-18 we used for six years had the motor overhauled after five years, and when we traded a year later the transmission and drives were still original equipment. I believe this heaved-up new model TD-18A is by far the best of all." *Advances like the new bridge-strong welded track frames, stronger transmission and exclusive cartridge-type track roller seals back his judgment.* O. Frost Black, Owner, Blanding, Utah.

Ease into the foam-rubber-padded, panoramic-vision seat and see the *decisive difference*. Try new finger-tip power steering, and other big *job-easing incentives* for boosting production, as developed only by International. Prove TD-18A *full-power traction*—note, too, how the gear train is beefed-up to transmit 103 drawbar hp, and then some! Measure what

new 300% *stronger track frames* mean for *full-capacity performance* under slam-bang conditions. Compare how new *cartridge-type track roller seals*, and other International *downtime-prevention engineering*, beat anything else on tracks. Ask for a new TD-18A demonstration!



INTERNATIONAL®
INDUSTRIAL POWER

MAKES EVERY LOAD A PAYLOAD



One of the 160 Uses of CONCRETE on Railroads

NO. 27 OF A SERIES

This 40- x 408-ft. concrete warehouse was built by the St. Louis Southwestern Ry. for handling merchandise for truck delivery in Dallas. Economy in construction was achieved through the "tilt-up" method. Wall panels were cast flat on the floor in simple edge forms and tilted up into final position.

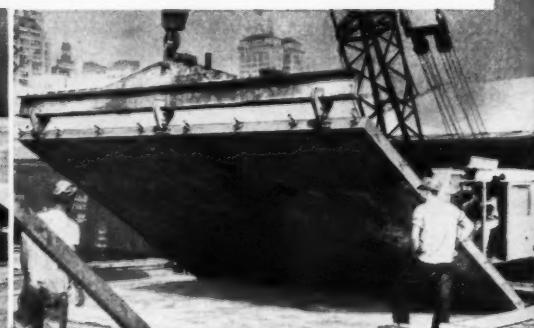
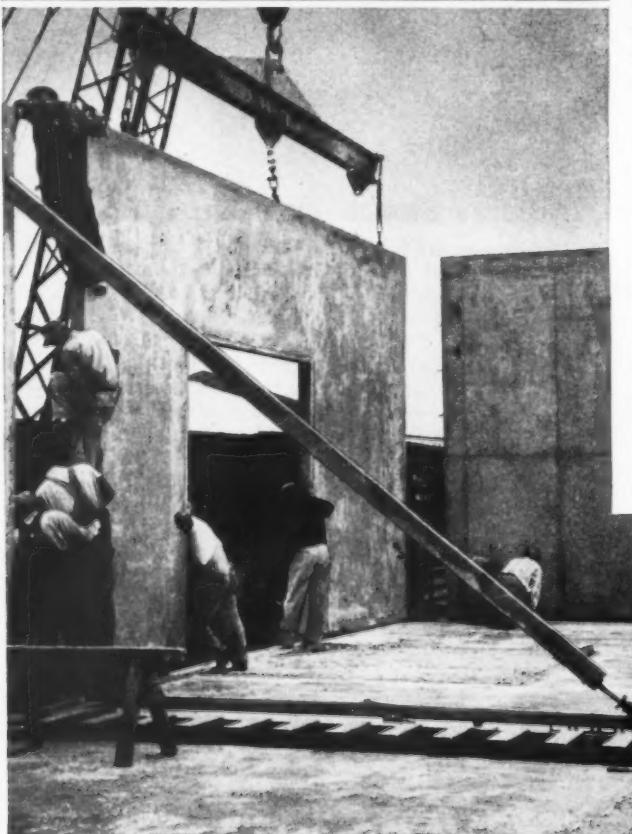
Concrete tilt-up warehouses are just one of more than 160 uses of portland cement and concrete which enable railroads to improve service, provide greater safety, save time and money. The moderate first cost of such concrete improvements—plus their long life and low maintenance cost—result in *low annual cost*. This saves money for other necessary budget items.

Write for free literature on tilt-up construction methods. Distributed only in the U. S. and Canada.

PORTLAND CEMENT ASSOCIATION

Dept. A10-27, 33 W. Grand Ave., Chicago 10, Ill.

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work





the little compressor that does a big job



BIG IN PERFORMANCE

Operates **FOUR**
Ingersoll-Rand MT-4 Tampers

BIG IN ECONOMY

SAVES SPACE—only 32" high
on a 27" base plate

SAVES LABOR—readily moved
from one spot to another

SAVES UPKEEP—rugged
construction, minimum
maintenance

The SPOT-AIR, operating *four* MT-4 railroad tie tampers, delivers 36 cfm at 80 psi. With wheelbarrow mounting shown, one man can readily take it almost anywhere.

From its comparatively small size, you wouldn't suspect this compact SPOT-AIR Compressor could deliver so much air power so economically.

SPOT-AIR weighs only 265 lbs. It's a self-contained, single-stage, gasoline-powered compressor. Because it is completely air-cooled, you can use it in any kind of weather—without danger of freezing in winter—or overheating in summer.

With *four* I-R Type MT-4 Tampers,

the 3R-36 SPOT-AIR makes a complete air-tamping team. You'll find it saves time and improves work in practically any job where air power is applicable. For further information, see your nearest Ingersoll-Rand representative.

Ingersoll-Rand
11 BROADWAY, NEW YORK 4, N. Y.

AIR TOOLS

Spike Drivers Wood Borers Backfill Tamers
Grinders Riveting Hammers Paving Breakers
Impactools Rivet Busters Pumps
Wire Brushes Scaling Tools Utility Hoists

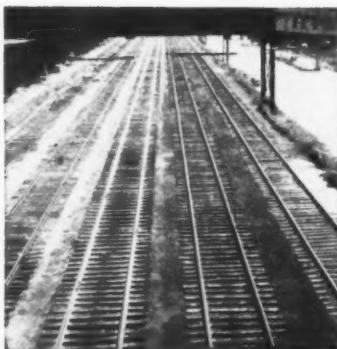
COMPLETE  AIR POWER
TO MEET NEEDS OF ANY JOB

PORTABLE COMPRESSORS

A complete line in 36, 60, 85, 125,
210, 315, and 600 cfm sizes.

Weed and Brush Control lasts longer with Du Pont **TELVAR® and AMMATE®**

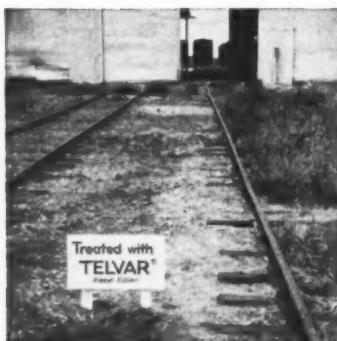
Weed Killers



"Telvar" has kept this yard clean of vegetation for two years.



Track at right was treated with "Telvar" Weed Killer. "Telvar" won't corrode equipment; it's non-flammable, non-volatile.



Area treated with "Telvar," left; untreated, right. "Telvar" is easily applied, extremely low in toxicity to humans and animals.

Weed and Brush Killer

One application of "Telvar" solves
weed problems for a season or longer!

"Telvar" kills through the roots . . . prevents regrowth. Low dosages (20 to 80 lbs. per acre) make it cost little for the results you obtain. Low rates also mean less handling, less storage facilities. If you're looking for a way to cut maintenance costs to new low levels, include "Telvar" in your weed-control program. Available in two formulations: "Telvar" W; and "Telvar" DW, which is especially suited for light, sandy soils and in areas where annual rainfall is higher than 20 inches.

"Ammate" kills more kinds of brush
and keeps it down longer than most
weed and brush killers!

When the original spray job is well done, brush is kept under control with nothing more than an occasional spot spray later. You can rely on "Ammate" to do the job safely, even where your rights-of-way adjoin crop land, because "Ammate" is not volatile. There are no vapors to drift onto sensitive crops.

FREE ILLUSTRATED BOOKLETS describe how to control weeds and brush with Du Pont chemicals. For your copies, write to Du Pont, Grasselli Chemicals Dept., Rm. D-4032, Wilmington, Del. In Canada—Du Pont Company of Canada Limited, Box 660, Montreal.

TELVAR® AMMATE®

Weed Killers

Weed and Brush Killer

On all chemicals always follow directions for application. Where warning or caution statements on use of product are given, read them carefully.



BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY



Brush along right-of-way was controlled with "Ammate."



Before

Maintenance crews prefer "Ammate" because they can use it without hazard to themselves, livestock, wildlife or adjoining crops.



After

Same right-of-way as above, three years after treatment. Brush still under control; low-growing cover returned to resist erosion.



Want to know more than this before you buy?

Most people do. That's why Fairbanks-Morse has trained the largest staff of application engineers—serving the railroad industry *exclusively*.

Factory trained, field experienced, your F-M Railroad Specialist contributes an important plus to your specifying and purchasing program.

You'll get your money's worth from your F-M Railroad Specialist.

Fairbanks, Morse & Co., 600 South Michigan Avenue, Chicago 5, Illinois.

In addition to his own significant contribution, he is backed by:

- Scale engineering that covers more than 125 years. (There is more F-M scale capacity on the railroads than all other manufacturers combined.)
- Design experience of the world's largest pump manufacturer. (There are 50,000 models in the complete F-M line.)
- The knowledge gained in manufacturing a complete line of electric motors since 1905.
- The world's largest diesel design staff . . . creators of the engine in the most powerful locomotive on the rails—the F-M Train Master.
- More than 75 years' experience in the manufacture of rail cars and other specialized rail and signal maintenance equipment.



FAIRBANKS-MORSE

"a name worth remembering when you want the best"

TRACK and STRUCTURES

Subject:

**Dear
Readers:**

Primarily for Advertisers

We hope those of you who are railroad men will be interested in what we have to say this month, but this is not written primarily for your benefit. We will be talking about our railroad readers but the words will be intended as a message for those responsible for the preparation of the advertising pages that appear between our covers.

The writing of advertising is a profession in itself. The rules, principles and techniques to be followed are such as to require years of study and experience to produce a finished copywriter. For this reason it would be folly for an editor to pose as an expert on how to prepare advertising material. But when we are thinking about a magazine like *Railway Track & Structures* it is not difficult to make a case for the argument that the copywriter and the editor have much in common with each other in at least one sphere of their activities.

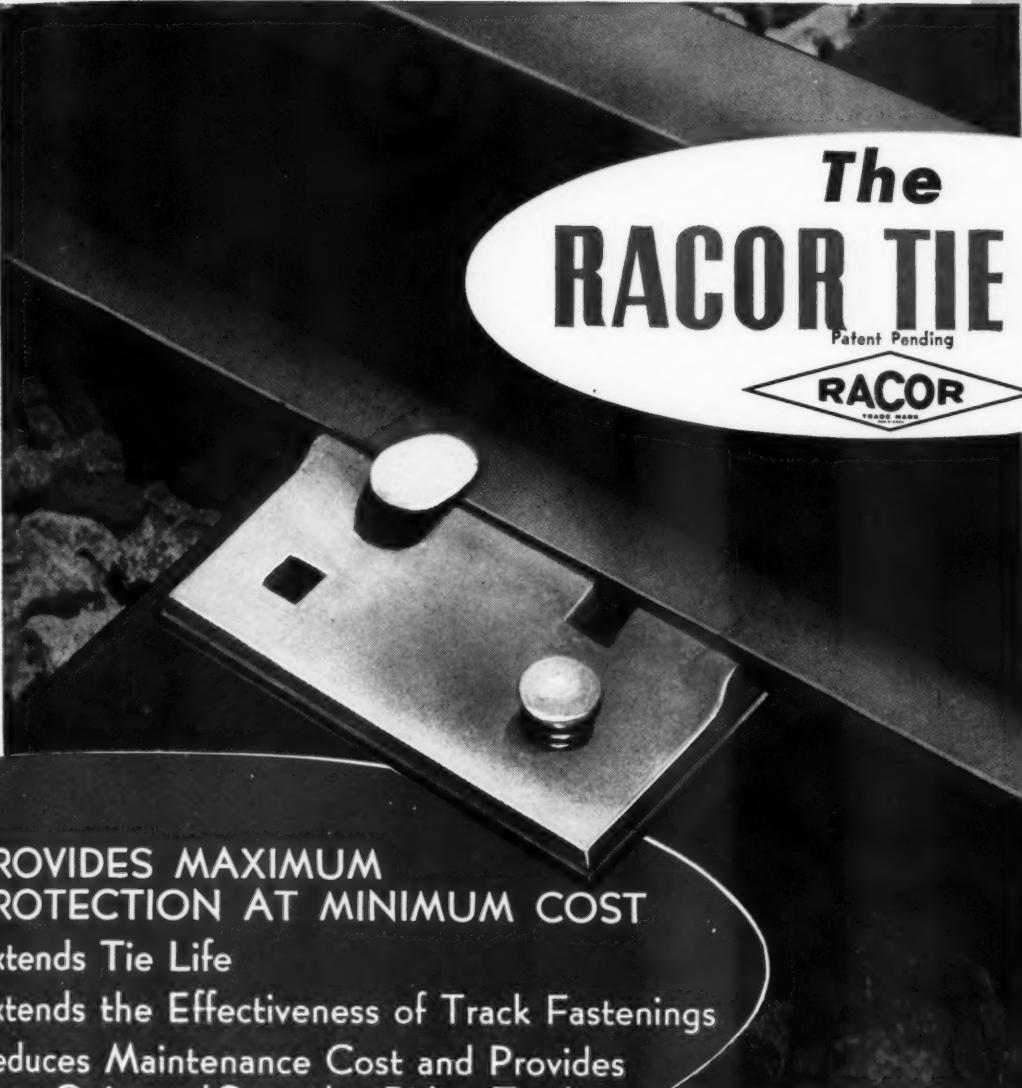
The basic aim of a magazine of this type is to provide a source of information in a specialized field. Those who read it do so to improve their knowledge of events and developments related to their work. They want to find out how they can do their job better and they want to prepare themselves for advancement.

It is easy to understand, therefore, why the information given in the editorial pages should be as factual and accurate as possible. To impress young editors with this requirement, they are frequently told that, while doctors can bury their mistakes and lawyers can get a new trial, editors' mistakes are there in black and white to haunt them forever. It is not necessary for an editor to work for a magazine of this type very long before he learns that readers are quick to spot an error or any evidence that a writer is not entirely familiar with the language of the trade.

Now our experience has been that the readers of this magazine insist on the same high degree of accuracy and integrity of expression in the advertising pages as they find in the editorial section. And this is where the editor gets onto common ground with the writer of advertising copy. The editor wants the reader to have confidence in what he writes so that the subscriber will continue to buy the magazine. The copywriter wants the reader to have confidence in what is said in advertising copy so that he will gain a favorable impression of the product advertised. Just as confidence can be created by accurate, factual writing, so can it be destroyed by mistakes, misrepresentation or evidence of amateurishness.

It would be too much to expect that errors and other undesirable features can be eliminated entirely from either the editorial or advertising pages, but we can strive to reduce them to a minimum. This requires hard work, an earnest desire to do a good job and a willingness to take infinite pains to avoid mistakes. But the results are worth the effort. First, there is the satisfaction we get merely by doing a good job. Second, it is worth a great deal to know that people are sufficiently interested in what we write to read it carefully and thoroughly. Third, there is much satisfaction in the thought that readers are enough concerned about the occurrence of mistakes to call them to our attention, even though some of them mistakenly assume that the editors are responsible for the preparation of the advertising pages.

MHD



The **RACOR TIE PAD**

Patent Pending



- **PROVIDES MAXIMUM PROTECTION AT MINIMUM COST**
- Extends Tie Life
- Extends the Effectiveness of Track Fastenings
- Reduces Maintenance Cost and Provides More Quiet and Smoother Riding Track

**America's
most complete
Line of
Track
Specialties**

RACOR SNOW BLOWERS

RACOR STUDS

**AUTOMATIC
SWITCH STANDS**

**TYPE M & MJ
VERTICAL SWITCH RODS**

**SAMSON
SWITCH POINTS**

SWITCH POINT LOCKS

RAIL LUBRICATORS

**ADJUSTABLE
RAIL BRACES**

**DEPTH HARDENED
CROSSINGS**

**REVERSIBLE MANGANESE
STEEL CROSSINGS**

**MANGANESE
STEEL GUARD RAILS**

**MANGANESE
STEEL SWITCH POINT
GUARD RAILS**

Write for descriptive folder.

Sales Offices: New York, N. Y.;
Buffalo, N. Y.; Cleveland, Ohio;
St. Louis, Mo.; Houston, Tex.;
Denver, Colo.; San Francisco,
Cal.; Niagara Falls, Ont., Canada.

Plants: Chicago Heights, Ill.;
E. St. Louis, Ill.; Buffalo, N. Y.;
Superior, Wis.; Pueblo, Colo.; Los
Angeles, Cal.; Niagara Falls, Ont.,
Canada.

**AMERICAN
Brake Shoe
COMPANY**

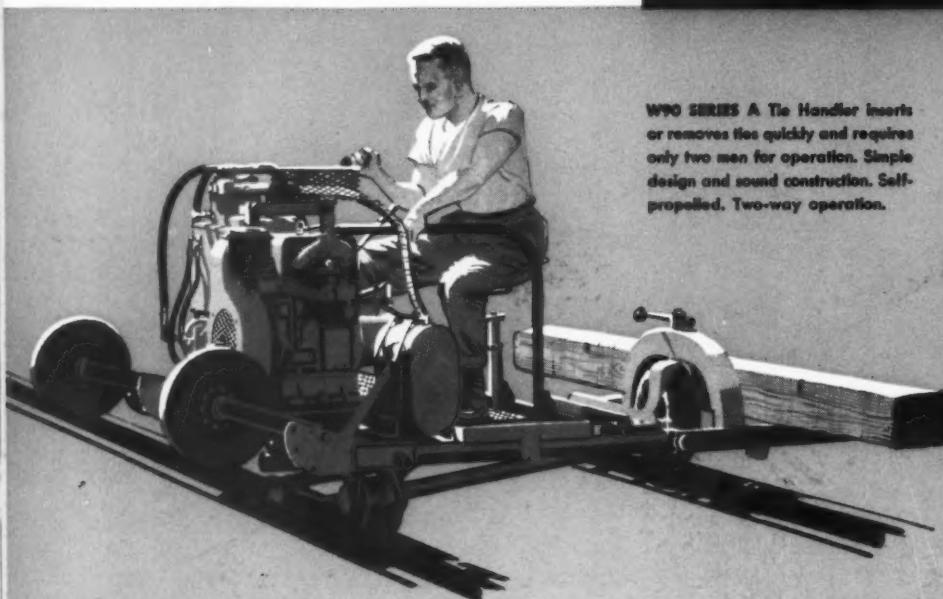
Contact your nearest RAMAPO rep-
resentative for further information.

RAMAPO AJAX DIVISION

155 North Wacker Drive, Chicago 6, Ill.

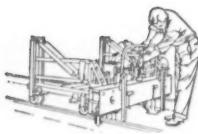
When you think of
TIE RENEWAL

...think of
Fairmont



W90 SERIES A Tie Handler inserts or removes ties quickly and requires only two men for operation. Simple design and sound construction. Self-propelled. Two-way operation.

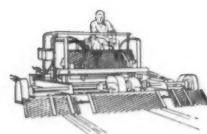
Through the course of its fifty years, Fairmont has turned its skill and ingenuity to virtually every problem confronting railway maintenance. And in each case, the result is written clearly in the record. Take a look, for instance, at the masterful products which Fairmont currently produces to assist the industry in the task of tie renewal. To be sure, they are only a few of the units which Fairmont manufactures for this field of maintenance—but they do emphasize the great scope, the wide variety and the unquestioned quality of all Fairmont tie renewal products. And, as experienced railway personnel know, they are thoroughly "Fairmont" in their dependability, their economy and their thoroughness of operation. In short, they offer positive proof that when you think of tie renewal, it pays to think of Fairmont—the first and finest name in railway maintenance!



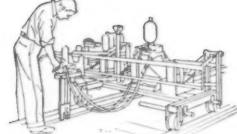
W86 SERIES A Hydraulic Rail Lifter features a spring-counterbalanced lifting arm, welded steel supporting frame and a direct-driven hydraulic pump. Two-man track removal.



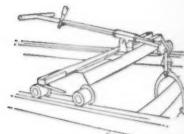
W68 SERIES A Hydraulic Tie Remover removes ties at an average rate of approximately one per minute. Ruggedly built with a minimum of moving parts. Two-man operation.



W87 SERIES A Tie Bed Scarifier with one operator can dig a tie bed a minute to a controlled depth at right angles to rails. Assembly and drive are hydraulically operated.



W84 SERIES B Hydraulic Spike Puller is primarily for use in tie gangs. Light in weight, it features a ball and socket-mounted pull assembly. Will pull from either rail without change-over.



W83 SERIES A Tie Nipper features a simple linkage and lever which guarantee positive opening and closing of hooks. The handle can be placed in three different positions.

FAIRMONT RAILWAY MOTORS, INC., FAIRMONT, MINNESOTA

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RAILWAY

TRACK and STRUCTURES

October, 1955

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Competition Is Fine, but —

Much conversation is heard these days about the production of track-raising and tie-renewal gangs on different roads. Maintenance officers are proud of the accomplishments of their gangs, especially if the output exceeds that of comparable gangs on other roads.

That there should be a degree of competitiveness between roads relative to the output of gangs doing this kind of work is easy to understand. Recent years have seen the introduction of a variety of new machines for renewing ties and raising and surfacing track. Some roads have concentrated on one type of equipment; others have chosen different types. Each road, of course, is anxious to prove it has made the wisest selection. But even roads using machines of the same type are vying with each other to see which one can get the greatest production.

This is basically a healthy situation. The competitive spirit is fundamental in human nature, and it is the motivating force in the free enterprise system. For this reason, the ability to excel is a sort of yardstick by means of which a man's value to his company is measured. This is just as true in the maintenance of way field as it

is in any other line of endeavor.

Thus, the urge to outdo the other fellow in renewing ties and raising track is to be encouraged—up to a point. We add this qualifying phrase because production is only one of several things to be considered in determining the over-all economy of these gangs.

Many readers will recall the days when rail-laying work was in process of being mechanized. We had the same claims and counterclaims of production in terms of so many rails per hour or per day. But it wasn't long before a voice was heard here and there pointing out that production was not the only criterion; in fact, that it was no criterion at all if the quality of the work was sacrificed in the effort to boost output.

It is time that similar voices were heard again, this time cautioning against worshipping too wholeheartedly the god of production in the field of track surfacing and tie renewals. Obviously, a high rate of production is of questionable value if the track won't stay up. Also high output does not always mean low unit cost. Competition is fine, but it is a false guide unless it gives consideration to all pertinent factors.

Springboard for Ideas

Where do ideas come from? Conventions like the recent sessions of the Roadmasters' and Bridge and Building Associations, held in Chicago last month, are an important factor in the answer. Such conventions are in effect a "springboard for ideas."

The committee reports are the launching platforms of these ideas. This is so because the information presented in them has a sort of catalytic reaction on those who listen while the reports are being read. The listeners are frequently reminded of how they solved similar problems or of expedients they have found useful in handling this or that situation.

When these listeners are given an opportunity to be heard during the

discussion periods many are moved to relate their experiences and opinions. These extemporaneous remarks frequently disclose practices which, although considered "old hat" by the speaker because of repeated usage, may not have been discovered by others present and hence may prove of value in helping to solve their problems.

A supervisor fenced in by his own territory can easily get into a rut. The opportunity of attending a convention and of participating in discussions with others sharing similar problems could easily mean the difference between wallowing in that rut or getting out of it and making contributions to progress on his road.



(All aerial photos by Fairchild Aerial Surveys, Inc.)

PILE OF SCRAP is practically all that remains of Lackawanna's double-track, four-span, through-girder bridge over Brodhead creek near Stroudsburg, Pa. Wrecked spans are lodged against piers of highway bridge which is "gone."

Worst Floods Rip Eastern Roads

DISASTER IN PICTURES—Samples of the widespread damage wreaked upon the eastern roads are shown by the picture strips beginning at the top of page. (1) Gaping hole 300 ft long and 100 ft deep in DL&W main line near Cresco, Pa. (2) Collapse of 50-ft stone-arch culvert on Erie near Shohola, Pa., left this 110 ft long, 80 ft deep chasm. (3) "Suspension bridge" was left in Erie's line between Lackawaxen, Pa., and Hawley. (4) This is only one of 35 New Haven bridges wrecked by rampaging waters. (5) Another of New Haven's bridge casualties suffered throughout Connecticut and southern Massachusetts. (6) "Corkscrew" track like this on New Haven was only "minor" compared to much of road's troubles. (7) Jersey Central main line near Penn Haven Jct., Pa. (8) Lackawanna main line near Analomink, Pa., where Brodhead creek rose 30 ft in only few minutes. (9) Reading workmen tackle rebuilding job at south end of road's Tamaqua (Pa.) yards.

(5)





By R. F. LINDSAY

● Many months, and in some cases years, will be required for the Eastern roads to recover completely from the disastrous floods of August 18-19—their “worst disaster in history.”

Striking with unparalleled fury, the flash floods in a five-state area covering southern Massachusetts, most of Connecticut, southeastern New York, eastern Pennsylvania, and northern New Jersey crippled severely the operations of three major roads for weeks and disabled half a dozen others for periods of several days. In the short span of a few hours scores of steel bridges,

D-i-a-n-e Spells Disaster

Here's the combination of events that produced the most devastating floods ever to hit the northeastern states:

- Torrential rains of 10 to 14 in. in less than 24 hr.
- Generally mountainous terrain, causing extremely rapid runoff.
- Soil that already had been saturated by previous rains.

Hurricane Diane, which wallowed off the east coast in mid-August for several days had “blown itself out,” according to weather experts, and was no longer considered very dangerous. But what had not been reckoned with were the tons of moisture-laden air which the dying tropical storm had gathered into its fold while sitting “innocently” off the eastern seaboard. When Diane finally began to move, its winds carried this saturated air inland to the mountainous regions where the heavy load of water was literally dumped in the span of a few short hours.

One resident of upper Pennsylvania told this reporter that he measured over 10 in. of water in an old tub in his back yard in just a little over six hours. Other reports claim upwards of 14 in. in less than 24 hrs.

The mountainous streams, which are naturally swift moving because of their

steep gradients, but normally clear and peaceful, were transformed into surging “tidal waves.” According to numerous eye witness reports Brodhead creek at Stroudsburg, Pa., rose 30 ft in 15 min. People were forced to run for their lives.

Another factor adding to the danger was the failure of many dams along the upper reaches of the streams. Many of these dams burst wide open, adding thousands of tons of additional watery death and destruction to the already swollen creeks.

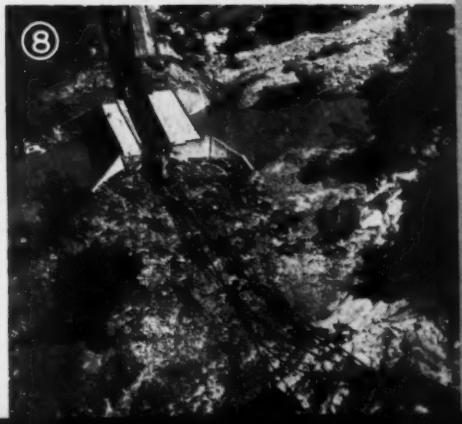
Most of the destruction occurred along the tributaries of the Delaware and Susquehanna rivers in New York, New Jersey and Pennsylvania, and along the Connecticut and Housatonic rivers and tributaries in Massachusetts and Connecticut. In a rush to dump their loads of water into the main river channels and into the sea, the streams wiped out everything in their paths. When a culvert or bridge did not provide enough opening for the water, it was literally “blown out” and the roadbed carried away to provide an adequate waterway. In many cases streams changed their own channel from one side of the railroad tracks to the other, and in some instances actually converted the roadbed into a stream-bed.

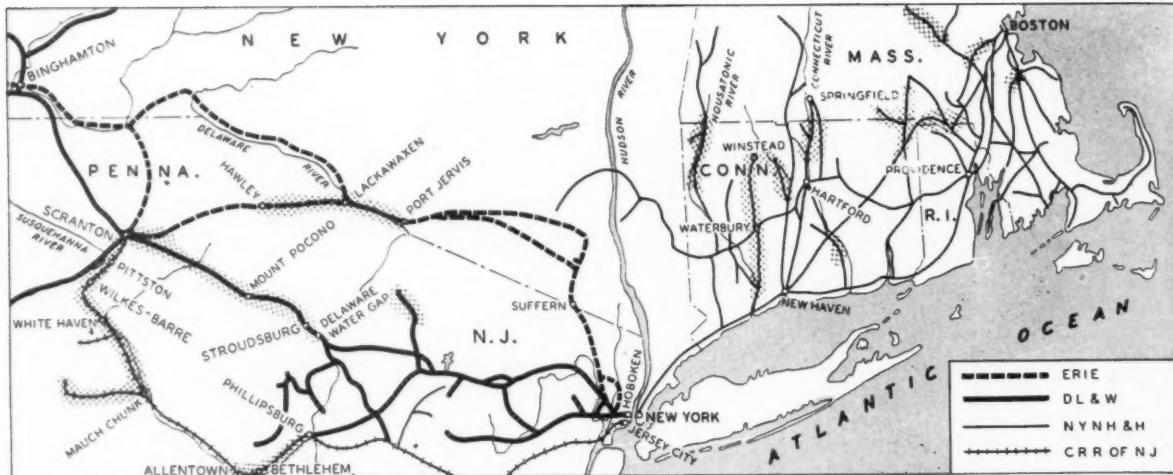
both large and small, were smashed into heaps of scrap, rail was twisted like barbed wire and miles of roadbed were completely obliterated to depths of 100 ft in places.

Damage to railroad properties alone was in the multi-millions of dollars with loss of business and the cost of detouring trains by circuitous routes swelling the property damage figure by additional millions.

The force of the rampaging flood waters was almost beyond imagination. The term “washout” is certainly not adequate to describe the gaping holes left in the wake of the receding waters. Following a flood we normally think of tracks being washed out from 5 to 10 or maybe

(Continued on next page)





HARDEST HIT areas on four eastern roads are shaded on this map. Boston & Albany (not shown) also suffered heavy damage between Springfield, Mass., and Worcester. Other roads had widespread damage, though not as severe.

even 15 ft deep with rails and ties still intact and laying like a roller coaster on the damaged roadbed. There were countless stretches of track washed out in this "conventional" manner—but these were considered only minor conditions as compared to scores of others.

A few examples of what may be called "major" washouts, described in the same succinct language used by railroad men in reports to their superiors, are as follows: All tracks washed out for a distance of 800 ft, 60 ft deep, and a large stone-arch culvert destroyed; all tracks washed out for 1500 ft, 25 ft deep; all tracks washed out for 130 ft, 80 ft deep; all tracks washed out for a distance of 300 ft, 100 ft deep, and a 17-ft stone arch culvert destroyed; all tracks washed out 350 ft, 65 ft deep, and a 20-ft stone arch culvert destroyed. Such a list could go on and on giving many other locations where damage was just as severe.

In many places there was no evidence of a railroad track ever having been there. Rails and ties were completely "gone" and what had once been a roadbed was leveled off or filled with huge rocks and debris deposited by the flood waters.

Bridge abutments, piers and concrete and steel spans were tossed around like so many children's blocks and culverts were literally "blown up" by the force of the waters. Sides of steel and masonry buildings and in some cases the whole structures themselves were ripped and smashed in a fashion reminiscent of World War II days.

The individual roads hardest hit by the storm, and the damage sustained by each, are indicated in the following summary:

Boston & Albany—Heavy damage on its line between Pittsfield, Mass., and Worcester. The eastern half of this segment was not expected to be back in service before about September 20.

Central of New Jersey—Main line between Phillipsburg, N.J., and Scranton was cut by 10 severe washouts, considerable scouring and three major slides. The road's principal classification yard at Allentown, Pa., was inundated to a depth of 4 ft. The Jersey Central also suffered severely from washouts and slides on branch lines from Jim Thorpe, Pa., to Haucks and between Wilkes-Barre and Lee.

Delaware, Lackawanna & Western—Multiple-track main-line between Stroudsburg, Pa., and Scranton (a distance of about 50 miles) paralyzed by nearly 100 washouts, slides and damaged culverts. Heaviest single loss was double-track, four-span, through-girder bridge

at East Stroudsburg, which was completely demolished, piers and all. Other damage areas included Sussex and Bloomsburg branches.

Erie—Four major washouts, including three large stone-arch culverts destroyed and a deck-plate girder bridge badly damaged, on its main line between Port Jervis, N.Y. and Lackawaxen, Pa. The road's Port Jervis station and yard were flooded. Its branch line between Lackawaxen and Scranton was also hit hard, and the car shops and yard at Dunmore, Pa., were reduced to a mass of rubble.

New York, New Haven & Hartford—Thirty-five bridges disabled, many completely destroyed, 68 washouts and 12 landslides on its lines throughout Connecticut and southern Massachusetts. Most of damage was on secondary lines, with the road's important Bridgeport-Winsted line through Waterbury sustaining the heaviest damage.

... And Then the Reconstruction

Hit hard, but not beaten, the eastern roads had to call upon all their resources in restoring the many crippled lines as rapidly as possible. Thousands of men, hundreds of thousands of tons of material and a vast array of mechanized equipment were assembled and moved into the flood-ravaged areas—almost overnight.

Crews worked round-the-clock at man-killing pace, with only one goal in sight—"get a track through." One railroad officer remarked that "the cooperation of our employees from top to bottom is one of the finest displays of loyal service I

have ever seen. We have not heard one complaint from anyone about anything."

The aggressive spirit, ingenuity and dogged determination shown by all of the roads in the staggering job of reconstruction is exemplified by the Lackawanna and the Erie, both of whose main lines were knocked out of service for weeks. Details of how these two roads carried out their rebuilding tasks are presented on the following pages. Limitations of time and space prohibit us from describing reconstruction work on the other roads hit by the storm.



VAST ARRAY of earthmoving equipment moves in to attack 2½ mile long "mess" along what was the Lackawanna's three-track

main line at Anolomink, Pa. Road hired 15 outside contractors to help out with the immense rebuilding job.

Operation Flood

Lackawanna Moves Mountains

● Its multiple-track main line knocked out completely for 50 miles, the Lackawanna was faced with a tremendous task of reconstruction. Many of the washed-out spots in the 50-mile territory were inaccessible by either road or rail.

The washout territory was cut off at both ends by very heavily damaged sections of track within two miles of each end of the 50-mile stretch. At the east end a four-span through-girder bridge across Broadhead creek was completely demolished eliminating the possibility of entering the washout territory by rail until a bridge had been erected

over the stream. A short distance west of the wrecked bridge, the roadbed and tracks had been completely obliterated for nearly a mile. At the west end of the territory 800 ft of tracks were washed out completely to a depth of 60 ft, and one-third of a stone-arch culvert was demolished, making it impossible to enter from this end until the gaping hole could be spanned.

Come in From Sides

The only solution to the difficult situation, as Lackawanna officers saw it, was to flank the 50-mile

stretch and come into the railroad from the sides with enough men, materials and equipment to attack the individual washouts simultaneously. In this manner considerable time could be saved in getting a track through the territory. The damaged track could be cribbed up where possible, culverts installed and subgrade and track rebuilt. Once a temporary track had been put through, even though unstable, work trains could come in and unload ballast and additional fill material quickly along the entire washout territory without waiting for tracks to be built across.

Reconstruction of Bridges and Culverts . . .



SPANNING Brodhead creek with temporary bridge was tough job since solid rock bed precluded driving piling for temporary structure. Contractor used wood frame bents on rock cribs to support new 25 and 33-ft girder spans.



NEW CULVERT at 100-ft hole was built with sheet piling sides and I-beams across top. Chasm was then filled by earthmoving equipment.



TRIPLE PIPE CULVERT was used to replace double-barrel concrete box which was damaged at this 130 ft long, 80 ft deep washout.

The road hired 15 outside contractors with several hundred pieces of equipment, including earthmoving machines, cranes, pile drivers and dump trucks to carry out the initial problem of restoring the subgrade and bridge structures. Where there were no roads giving access to the tracks, the contractors built them as they moved in. Several hundred additional men were hired from local areas to help out with the tremendous task of unloading ballast and rebuilding and surfacing tracks.

G. A. Phillips, chief engineer of

the Lackawanna, is directing that road's reconstruction operations. To supervise the rebuilding work from the west end the road called upon J. P. Hiltz, Jr., general manager of the Delaware & Hudson, who was formerly engineer maintenance of way of the Lackawanna. Working with Mr. Hiltz at the Scranton end was R. F. Bush, engineer maintenance of way. B. L. Beier, engineer maintenance of structures, supervised the rebuilding of bridge structures over the entire territory.

Track supervisors from Buffalo,

Elmira, Syracuse and Binghamton were moved into the washout area to assist the supervisors at Scranton and Stroudsburg with direct supervision over the many rebuilding jobs. Supervisory personnel were given wide authority to hire men and equipment and to purchase materials as necessary where they saw fit.

Two 12-Hr Shifts

The work was carried out with two 12-hr shifts for both supervisors and the men. Portable generating plants and floodlighting equipment, rented or purchased, were moved in from all over the railroad to provide lighting for night operations in the flood-damaged territory.

Material for fills was obtained from about every conceivable source. Endless streams of dump trucks transported mine rock (a waste material from strip-mining operations, consisting primarily of a mixture of rock, coal and dirt) from the Scranton area to the various washout locations. Rock bluffs were blasted off and entire mountain sides excavated to obtain material for roadbed. In addition, shovels, clamshells and draglines were put to work dredging out streambeds, and depositing the material for roadbed.

As the subgrade was restored enough to accommodate one track, several gangs, called "pioneers," set about to build a track over the

Rebuilding Damaged Roadbed . . .



DUMP TRUCKS, in an endless stream, hauled mine rock from strip coal mines to washouts, while scores of earthmoving machines moved entire hillsides, to restore fills. At this particular location seven contractors took part in work.



ROCK BLUFF was blasted off near damaged stone arch culvert (foreground) to obtain material for filling 800 ft long, 60 ft deep hole.



CROSS TIES were used to crib up track at shallower washout points ahead of ballast unloading.



J. P. HILTZ, JR. (center), gen. man., D&H, was called in to assist R. F. Bush (behind Hiltz), engr. m/w, DL&W, with rebuilding.

new fills. Track supervisors were placed in charge of this track-rebuilding work. Materials for building one track across at the washed-out points and ties for cribbing were obtained from adjacent main-line tracks on both sides of the washouts. These tracks were ripped up and the material collected at the washed-out points before rebuilding of the subgrade was completed. In this manner, a new track could be built across as soon as the subgrade had been restored to a point where it would support one track.

Immediately behind the track rebuilding gangs, ballast was unloaded on a 24-hr basis by work trains. One group of track supervisors was responsible for this work

during the day, another during the night. While not unloading ballast, these gangs used power jacks to raise the track to grade and DL&W trackliners for lining.

Other work trains were used to shuttle air-dump cars and ballast cars back and forth from the yards to the work trains unloading the material. Temporary switches were installed at intervals to connect the through track with one of the adjacent disabled main tracks to provide storage space and switching connections for the shuttle trains and the work trains.

To make up for the thousands of feet of rail which was either lost or badly damaged, the Lackawanna ordered 3,000 tons of emergency rail from the Bethlehem Steel Com-

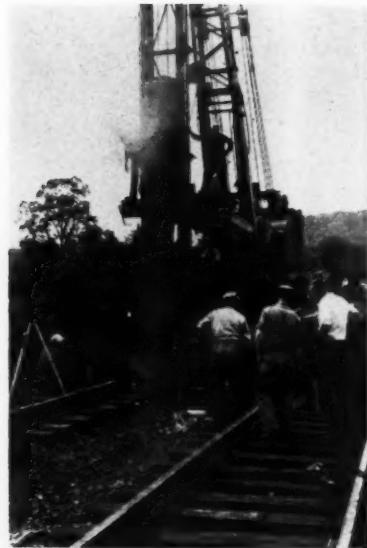
pany to be delivered to the Buffalo division. The new rail will be laid there, and the released rail used to repair the second and third main tracks in the washout territory. Officers report that the steel company set everything else aside to roll the new DL&W rail. This is only one example of the splendid cooperation the Lackawanna and other roads received from supply companies and contractors.

Because of the unstable nature of much of the material being used for fill, the Lackawanna plans to carry out a large-scale rip-rapping program beginning immediately. Officers estimate that around 20,000 cars of rock will be used for rip-rap along the new fills. The project is expected to take about two years.

Operation Flood



TEMPORARY STEEL BRIDGE was used to span this enormous hole in Erie's main line at Parkers Glen, Pa. Here special pile hammer, operated without leads, drives 14-in H-pile in bent to support one end of center girder span.



SYNTRON diesel pile hammer and diesel crane were borrowed from PRR to bridge-in from other end of territory.



DAMAGED culverts like this made bridging necessary at three of road's four major washouts on main line.

Erie Bridges Its Gaping Holes

Unlike the Lackawanna, whose damage was spread over a wide territory, the Erie's heavy main-line damage was confined to four very serious breaks in a 13-mile stretch between Parkers Glen, Pa., and Mast Hope.

At the latter location a deck-plate-girder bridge was washed off its piers, the east abutment destroyed and about 240 ft of track washed out to a depth of 25 ft.

The eastbound span of the double-track structure was destroyed beyond repair; however, the westbound span was in satisfactory condition to be used temporarily. A temporary abutment in the form of a timber pile cluster was driven at the east end and this span jacked up onto it. At the same time bulldozers were used to push in material for restoring the fill.

At the other three major points

of damage, reconstruction was complicated by the fact that large stone-arch culverts had been destroyed almost entirely by the terrific water pressure. The holes left at these points were 350-ft long, 65 ft deep, 110 ft long, 80 ft deep; 148 ft long, 55 ft deep, respectively.

The Erie decided that the quickest and most satisfactory way to span these holes was by bridging, using timber-pile bents with timber



PRR's DRIVER hammers wood piling for timber trestle (center) which was used to span 55 ft deep crater caused by "explosion" of center of stone-arch culvert near Shahola, Pa. Head wall and



section of upstream end of culvert (right) is still intact, illustrating freakish nature of washout in which water worked from bottom up through fill.



chords where possible and 14-in steel H-piles with deck-plate-girder and I-beam spans elsewhere. Officers felt that with this type of temporary construction, the benefits would be three-fold, i.e., a temporary track would be provided across the gap, plenty of waterway would be provided for the streams and design and construction of permanent structures could be carried out later without interference to or from the temporary structures.

To carry out this heavy bridge-building program, the road brought in its steel-erection crane, equipped with a special pile hammer for driving steel-H piles without leads, and two auxiliary locomotive cranes to handle materials. In addition the road borrowed a diesel locomotive crane and a Syntron self-contained diesel pile-hammer from the Pennsylvania. A PRR crew came with the pile-driving rig, and a representative of the Syntron Company was on the job throughout the rebuilding operation.

The Erie pile-driving rig worked in from the east end, while the Pennsylvania outfit bridged across from the west. The two met at the middle washout to open the single-track line.

Extra Help Drafted

The Erie brought in division engineers, master carpenters and other personnel from all over its system to assist with the reconstruction work. Headquarters at the east end were established at Port



ERIE OFFICERS discuss rebuilding plans near Mast Hope, Pa., with contractor's representatives. From left to right: F. N. Snyder, Art Price, L. H. Jentoft, H. J. Weecheider, J. S. Parsons and contractor's men.

Jervis, where two Pullman cars and a diner were brought in to house and feed and provide offices for supervisory personnel. L. H. Jentoft, engineer maintenance of way, Eastern district, was in charge of the east-end operations. At the west end, J. S. Parsons, assistant chief engineer, maintenance, and H. J. Weecheider, engineer maintenance of way, Western district, were headquartered in a business car at Narrowsburg, along with other supervisory officers. C. A. Roberts, engineer of structures, directed erection of steel work over the entire territory.

As on the Lackawanna, the Erie worked two 12-hr shifts, with two shifts of supervision also. In addition to pushing the work to completion, the day shift handled the transportation and preparation of all materials; the night shift was then left to carry on the actual rebuilding work.

Fortunately, practically all the material necessary for the bridge-building work was on hand, thus saving a great deal of time in rushing the job to completion. Another valuable time-saving element was the proximity of the road's steel bridge shop at Port Jervis.

Convention Report . . .



R. N. Begien, Jr., gave a "recipe of words" for evaluating human relations.



H. C. Munson stressed the need for better communication between individuals.



G. M. O'Rourke brought greetings from the AREA of which he is president.



J. P. Kiley said there should be a long-range program to promote efficiency.

Supervisors Meet to Trade Ideas

Training programs, improved techniques and changing work practices, better tools and machines and how to use and maintain them, and many other subjects were taken up at the annual conventions of the Roadmasters and Maintenance of Way Association and the Bridge and Building Association, which were held at Chicago on September 19-21. Representatives of management had their say at joint sessions.

JOINT SESSIONS

How to Be a Better Boss

● Three easy lessons in modern railroading for supervisory officers—that's one way to describe the subject matter contained in addresses presented by three top-ranking officers before joint sessions of the Roadmasters' and Bridge & Building Associations.

Automation to Play Big Role

The first lesson was delivered by J. P. Kiley, president, Milwaukee Road, in the form of an address entitled "New Challenges to Maintenance Officers." Mr. Kiley first presented a picture of future railroading in which he sees automation playing an important part in all departments. He then noted that, "as the future always becomes the

present, there is a lesson in this all of us should heed."

"First, it should teach us to keep our thinking fluid. The railroad official or supervisor who allows himself to think that the way we are doing it today is the way we'll be doing it tomorrow is certainly not an asset to his railroad.

"Second, there is the question of manpower. We must ask ourselves what type of employee will be needed to run the railroads of the future?

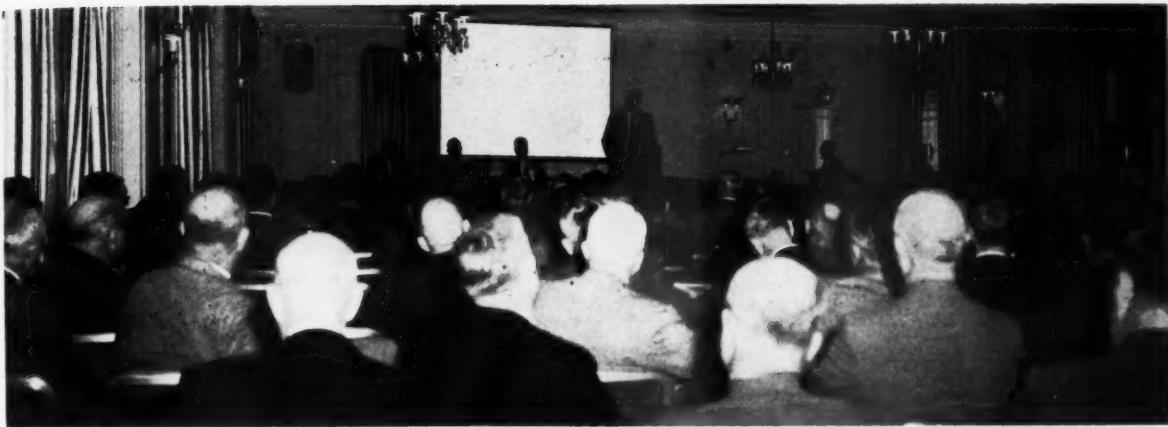
"Third, I sincerely believe that the fate of the railroads depends on our adopting every technological improvement to increase our efficiency.

Fluid thinking, said Mr. Kiley, means constantly searching for bet-

ter ways of doing the job. This, in turn, means that steps should be taken to insure that "new ideas generated at meetings such as this percolate through the entire organization."

Regarding the question of manpower, Mr. Kiley made the point that the railroads face the problem of educating employees in handling and operating the new machines being developed. Possibly they will "have to invade the educational field and set up schools. Possibly a group or groups of railroads should cooperate on some such plan." Perhaps the railroad suppliers should be brought into the picture by setting up training centers within their own plants.

As for technological improvements, Mr. Kiley believes there should be a long-range plan aimed at "more and then still more efficiency through technology and re-



Sessions of both the Roadmasters' and Bridge & Building groups were well attended. This view shows B&B meeting room. Total

registration for the three-day meetings came to 1308 members and guests, considerably higher than last year.

search." "Such a plan, he continued, should spring from big ideas—a clear recognition that practically nothing is impossible—that the way we are doing it now is not the way we'll be doing it 10 or 20 years hence."

Make It Your Business

The second easy lesson in modern railroading for supervisors was an address by H. C. Munson, vice-president and general manager, Western Pacific. Mr. Munson was critical of what he called "narrow-viewed supervision." As an example of this attitude he cited a remark once made by a superintendent to a roadmaster. The superintendent said, "you take care of the d—track, we'll run the trains." Mr. Munson believes that maintenance men should know about other phases of railroading and have not only a right to question superiors and explore other department functions, but in some instances actually have a duty to do so.

He stressed the need for officers and supervisors being entirely factual, frank and honest in their dealings with each other, and refraining from "buck-passing" no matter where the "chips may fall." His answer to this and many other supervisory problems is better communications between individuals "from the top down, from the bottom up and horizontally."

The third lesson, concerned with trends in railroading, was delivered in an address by R. N. Begien, staff assistant to vice-president—operations, Chesapeake & Ohio. Packed with facts about improvements and developments in all departments of railroading, technolo-

logical and otherwise, Mr. Begien's address wound up with some advice on how to achieve better human relations in railroading.

He presented this "recipe of words" for evaluating human relations:

The five most important words—

"I am proud of you."

The four most important words—"What is your opinion?"

The three most important words—"If you please."

The two most important words—"Thank you."

Least important word—"I"

ROADMASTERS' SESSIONS

Emphasis on Men, Machines, Welded Rail, Winter and Diesels

● "More mechanical skill, organizational ability, coordination and cooperation are required at all levels to accomplish today's railroad maintenance-of-way work." This statement, appearing in one of the committee reports presented during the Roadmasters' sessions, brings out a point that was emphasized several times during these sessions.

This committee report, on the subject "Training Program for Maintenance of Way Personnel," was prepared by a committee of which R. B. Radkey, engineer ties and treatment, Illinois Central, was chairman. The committee made the further point that "training programs are required for two important reasons—to perfect the individual in job skills, and to develop leadership and supervisory capabilities." It expressed the opinion that the benefits accruing from an organized training program would more than offset the out-of-pocket expenses incurred by the program.

The further point was made by



R. G. Simmons, president of Roadmasters' Association, directed the meetings of that group. He is gen. rdm., Milwaukee Road.

the committee that "training is the responsibility of supervision. Supervisory personnel may not recognize this portion of their duties by the formal title of 'training program'; however, their leadership function dictates that they must

Convention Report . . .



T. F. Burris, chief engineer, Northern Region, C&O; E. L. Anderson, chief engineer, Frisco; L. T. Nuckles, chief engineer, Southern Region, C&O; G. M. Magee, director engrg research, AAR.



H. W. Kellogg, engineer track, Northern Region, C&O; W. M. S. Dunn, gen. rdm., Nickel Plate; H. W. Cutshall, Electric Tamper & Equipment Company.

Photographs on these pages were taken by RT&S cameramen in corridors and meeting rooms of convention hotel. Included are members and guests of the two associations and supply company representatives. Also a number of AREA members attending committee meetings.



B. R. Meyers, chief engineer, and L. R. Lamport, chief engineer maintenance—both Chicago & North Western.



J. T. Mersmann and Harry J. Clark, both track supervisors, Terminal Railroad Association of St. Louis.

ROADMASTERS' SESSIONS

teach or train their subordinates." The foreman must teach the men under his supervision how to do the jobs expected of them, and the supervisor must train his foremen in new work techniques, instruct them concerning new track devices, and guide them in the general accomplishment of daily work. The supervisor must also maintain a reservoir of trained men capable of being promoted to such responsible positions as are necessary in his work organization.

The committee defined a training program as "the accelerated development of specialized capabilities

through guided learning." The effectiveness of training effort depends primarily upon the correct application of the principles of learning, and knowledge of these principles is necessary for any success in training. If a training program is to be successful, the instructor (the supervisor) must be prepared. He must know what he is going to do and say. The subject material must be in logical order, easy to understand, comprehensive and complete, according to the committee.

The committee made three recommendations regarding training programs for maintenance of way personnel.

"First, that all levels of super-

vision known, understand and practice good training methods.

"Second, that all railroads utilize logically planned and intelligently conducted training, not only in developing personnel for higher positions, but in accomplishing everyday work.

"Third, that the Roadmasters' and Maintenance of Way Association keep the subject of training on its agenda with the intent of developing and presenting details of suitable training programs for various key maintenance-of-way positions."

The application of training programs to a particular category of employees—operators of machines—was strongly emphasized in another

Elected at the convention the new officers of the Roadmasters' Association are:



W. M. S. Dunn
President



J. E. Griffith
1st Vice-President



E. L. Anderson
2nd Vice-President



E. E. Crowley
Treasurer



A. E. Moyness, E. E. Long, A. P. Vogel, E. W. Knesel—all roadmasters on Chicago, Milwaukee, St. Paul & Pacific; F. A. Douglas, Woodings-Verona Tool Works.



R. G. Garland, assistant engineer, Santa Fe; C. K. Luyster, Woodings-Verona Tool Works; J. M. Lowry, chief engineer, Cotton Belt; James McComb, Ramapo Ajax.



Royce Kershaw, Kershaw Manufacturing Co.; H. J. Wechelder, engr. maint. of way, Erie.



J. W. Christoff, Mannix International; Lyle Ehrenberg, Railway Track & Structures.



R. L. Cooley and J. D. Fanett—both roadmasters on the T&NO (Southern Pacific Lines in Texas).

committee report, which stated that "well-planned and comprehensive training programs for machine operators and the maintenance force are a necessity in creating efficient operation and maintenance of work equipment." This committee was reporting on improved methods in operation and maintenance of work equipment, and its chairman was R. H. Beeder, assistant chief engineer system, Santa Fe.

It stated that "those who are making the greatest improvements in handling their work equipment are concentrating on the 'people' involved in the program—and this includes the operator, the maintenance force and the supervisors.

WHO THEY ARE

The titles and connections of the new officers are: Mr. Dunn—gen. road., Nickel Plate, Bellevue, Ohio; Mr. Griffith, assistant chief engineer m of w and s, Southern, Knoxville, Tenn.; Mr. Anderson—chief engineer, Frisco, Springfield, Mo.; and Mr. Crowley—division engineer, D&H, Albany, N. Y.

Two new directors were elected: L. C. Blanchard, roadmaster, Milwaukee Road, Minneapolis, and R. H. Carpenter, district engineer, MP, Little Rock, Ark.

Other directors with terms expiring in later years are: C. E. Neal, division engineer, NWP, San Rafael, Calif.; S. E. Tracy, supervisor work equipment, CB&Q, Chicago; R. R. Monion, chief engineer, GN, St. Paul; G. B. McClellan, general roadmaster, T&P, Ft. Worth, Tex.; G. W. Neal, superintendent, Chattahoochee Valley, West Point, Ga.; and D. C. Hastings, super., RF&P, Alexandria, Va.

We can talk all we want to about the technical details—the octane of gasoline, the type of lubricating oil, the type and number of machines to be used in a rail-laying operation, and hundreds of others—but of primary importance are the individuals, or the personnel, who make all these programs function."

One of the first steps, according to this committee, is to promote the real fact that the individual is an important member of the maintenance-of-way team. One of the best means of doing this is to train and promote men from the ranks. In training these men "most railroads rely almost entirely on a two or three-day visit from a manufacturers' representative or serviceman when a new machine is secured. This practice certainly has its place in the scheme of things, but it does a lot more good from the standpoint of operation than it does from the maintenance angle, especially if the machine continues to work perfectly for the two or three-day period."

What this committee would have the railroads do is to institute training programs for both the operators of equipment and those who maintain it. However, it is convinced that "few railroads have even scratched the surface in the benefits that can be secured from such programs."

In discussing other aspects of the operation and maintenance of

work equipment this committee said it had found that approximately 50 per cent of our railroads follow the practice of operating power tampers in tandem when conditions justify it. It also feels it is sound practice to provide complete spare machines for the larger and more important gangs, such as rail-laying crews, where train operation would be adversely affected or delays to a large number of men would occur by the failure of one machine. It pointed out that the extra machines carried by a rail-laying gang usually include power wrenches, spike pullers, adzes, air compressors and perhaps even an extra gang-type motor car. The committee also noted that an equipment maintainer is usually assigned for handling the equipment repair work on the larger more important gangs.

Many railroads are sidestepping the problem of proper lubrication of equipment by deciding that the lubrication should be handled in accordance with "manufacturer's recommendations," according to this committee. It feels that one of the answers to this problem is a complete chart of oil specifications on which each separate item of machinery is listed with all of the satisfactory lubricants for that item. "In using this chart, the operator can be certain that he is ordering and receiving the proper lubricant and can also determine if a sub-

Convention Report . . .



W. A. Kingman, assistant engineer (retired), Santa Fe; John R. Rushmer, roadway engineer, Santa Fe; Kenneth Cavin, Fairmont Railway Motors, Inc.



A. W. Boorum, Railroad Materials Corporation; S. H. Knight, supervisor work equipment, Northern Pacific; J. C. Ryan, Matisa Equipment Corporation.



SP representatives—C. E. Neal, division engineer (NWP); R. W. Putnam, engineer maint. of way and struct.; C. J. Kennedy, roadmaster; M. T. Pruett, roadmaster; V. J. Gale, roadmaster (NWP).



More from SP—W. D. Boyle, rdm., (PE); T. J. Vansandt, gen. trk. supv.; C. D. Langford, rdm.; A. G. Humphries, water and fuel engr.; H. C. Munhallon, rdm.; J. J. O'Keefe, rdm.

ROADMASTERS' SESSIONS

stitute will be found satisfactory."

Track-maintenance considerations arising through the extensive use of diesel power came in for discussion in several committee reports. One committee conducted an extensive investigation of the effects of dieselization on track. This committee was headed as chairman by M. S. McClendon, roadmaster on the Frisco at Sherman, Tex. Some of its conclusions were that, with diesel power, it is the general opinion that line under ordinary circumstances is easier to maintain both in open track and through turnouts; that the surface of track has required somewhat less attention on heavily used main lines due to the fact that there is less waste with diesels of fuel and water on line of road; that diesels have brought about a marked reduction in gage maintenance on heavy-traffic lines, and that, due to the smooth application of power to the driving wheels at all times, diesels do not burn the rail as often as steam engines, although where such burning occurs, diesels cause a deeper and more abrasive burn than steam locomotives.

The committee found, however, that maintenance work on switches and frogs with diesel operation, generally speaking, seems to have increased, and that it has been "universally noted that the high rails

of curves wear out faster with diesel power than they did with steam power." The same finding was noted by a committee reporting on "The Importance of Curve Lubricators, Their Installation and Maintenance," of which M. G. Counter, district maintenance engineer, Chicago, Burlington & Quincy, was chairman. This latter committee reached the conclusion that "savings may be realized by lubricating the outer rails of all curves of 2 deg or over." Some of the committee members expressed the opinion that savings can be realized by lubricating curves of 1 deg 30 min, and even 1 deg curves in high-speed territories.

This committee expressed the further opinion that "proper lubrication is important enough to every maintenance officer to see that a thorough study is made of existing lubricators to be sure that they are giving the maximum benefits and to present the necessary arguments for the purchase of additional lubricators actually needed. . . ."

Several recommendations applying to the practices to be followed in hauling, laying and maintaining continuous welded rail were made in a report by a committee investigating that subject. Chairman of this committee was L. B. Cann, Jr., division engineer, Richmond, Fredericksburg & Potomac, Richmond, Va. The committee urged the use of an adequate number of rail anchors with continuous rail and

said that the anchorage used should be applied in a most effective manner as the rail is laid. Temperatures ranging between 80 and 90 deg F seem to be the most favorable limits to be observed when laying continuous rail according to this committee.

During the actual laying of continuous welded rail the committee recommended that temperature readings be taken on an average of once an hour throughout the day and recorded so that in future years, when the track is worked, this information is available for those persons responsible for doing the work.

In fighting snow at terminals, "it has been found advantageous to develop and circulate a coordinated plan prior to the snow season." This statement was made in a report on modern methods of handling snow, of which R. W. Middleton, division engineer, Milwaukee Road, Butte, Mont., was chairman. After the snow season is over, the committee feels it would be advisable to have a meeting of supervisors "to review and iron out last season's problems and to hear new ideas and to review the plans of the coming season" When so organized, said the committee, the snow-handling problem, when and if it develops, can be met head on with an organization that is fully aware of the part and responsibility that each supervisor is to play.



E. W. Caruthers, assistant engineer (retired), Pennsylvania; W. S. Lacher, secretary (retired), AREA; G. W. Miller, engineer maintenance of way, Canadian Pacific.



E. M. Cummings, division engineer, Baltimore & Ohio; H. D. Curie, master carpenter, also B&O; A. A. Cross, Bird & Son.



B. E. Daniels, division engineer; B. L. Hilliker, superintendent rail mill—both Milwaukee.



H. B. Christianson, special engineer; J. M. Murphy, roadmaster—both Milwaukee Road.



E. Eskengren, Jr., roadmaster, Frisco; V. E. Yeargain, roadmaster, also Frisco.

BRIDGE & BUILDING SESSIONS

Discuss Effects of Diesels; Also Signs, Power Tools, Bolts

● "Perhaps the most important advancement in connection with the construction and maintenance of roadway signs has been the advent of central sign shops. It is a comparatively new method but is rapidly gaining favor with railroad management."

This statement, appearing in a committee report discussing the construction and maintenance of roadway signs, was one of many made during the B&B sessions applying to new trends and developments. The chairman of this particular committee was F. W. Hutcheson, supervisor bridges and buildings on the Chesapeake & Ohio at Newport News, Va. The committee pointed out that the need for central sign shops stems from the increasing requirements for reflectorization. "A few states now require by law that all cross-bucks be reflectorized," said the committee. "It also seems to be the universal practice to have all speed-control signs and many special signs reflectorized. Experience has shown that it is not consistent to carry out such work in the field be-

cause the necessary conditions for proper application can not be met."

Many roads are making an effort to reflectorize all their highway crossing signs, according to this committee. For such signs, several railroads are using a self-supporting extruded aluminum panel to which is applied the reflective sheeting.

"Some form of reflectorization for roadway signs is becoming more and more a requirement in recent years, both from the standpoint of safety and to meet the provisions of local ordinances and state laws. We predict this tendency will increase in the years to come."

The continuing introduction and adaptation of new and improved tools in bridge and building work represents another trend that was brought out in a committee report. Chairman of this particular committee was R. L. Fox, division engineer, Southern, Alexandria, Va. Among the new and improved devices described in this report were a foreign-patented, ratchet-type, manually operated hoist, which is only a year old in this country; a



H. M. Harlow, president B&B Assn., directed the sessions. He is asst. gen. supv. b. & b., C&O.

hydraulic rock jack for demolishing mass concrete or stone structures; a straight-line action sander; a wide-gage pneumatic-tired diesel crane; the use of flash-type boilers to supply steam for pile-drivers; and a self-contained diesel-driven pile driver.

Another trend brought out in a committee report dealt with the increasing use of special bolts in structural steel work. Chairman of this committee was H. M. Dick, supervisor of structures, Pennsylvania, Harrisburg, Pa. Speaking first of so-called rivet bolts, the committee said they "are very useful and are commonly used for new

Convention Report...



M. R. Brooks, assistant to engineer track; Lonnie R. Hall, district engineer maint. of way; M. G. Counter, district engineer maint. of way—all CB&Q; Fred Holstein, Rails Company.



T. H. Taylor, assistant engineer, Pennsylvania; R. M. Jenner, J. C. Cosgrove, E. J. Powell—all Railway Maintenance Corporation.



Gordon W. Neal, superintendent, Chat- tahoochee Valley; R. H. Gilkey, div. engr., C of Ga.



G. W. Benson, supt. bridges; Simon For- garty, Jr., asst. trk. & b. & b. supv.— both C of Ga.



R. S. Stephens, supervisor work equip- ment, Wabash; George Achuff, Achuff Railway Supply Co.

B&B SESSIONS

construction and maintenance repair of structures that are not subject to heavy impact loading."

Referring to high-strength bolts, the committee said they are manufactured by several firms and are now regularly stocked in most common sizes and are readily available. Their principal feature is the high clamping force that they exert upon connected members. It was noted that some design engineers and maintenance men were hesitant at first to use high-strength bolts because of the opinion that the nuts would loosen. However, the committee explained that, due

to the characteristics of the bolt, the nuts have a self-locking action so that there is no tendency for the nut to loosen in service.

It has been found, said the committee, that high-strength bolts inserted in holes through materials that are clamped together should be finger tightened in place and then given one-half turn of the nut to establish minimum required bolt tension. One full turn of the nut from finger-tight position will insure the minimum bolt tension needed for proper action of the bolt in the joint and will not damage the bolt.

The committee stated the possibility that high-strength bolts will eventually replace hot-driven rivets

in all field erection work. One man with an impact wrench and one man with a backing-up wrench, it said, will install and tighten up four high-strength bolts in the same time it takes four men to handle and drive three rivets. "This would indicate a possible 50 per cent saving in labor by using high-strength bolts in the field."

Trends in bridge and building and water service organizations were described in a report prepared by a committee of which V. D. Raessler, supervisor of bridges and buildings, Illinois Central, Memphis, Tenn., was chairman. After first noting that highway trucks are replacing motor cars for transporting bridge and building

New officers of the B&B association, as elected at the convention, are:



J. A. Jorlett
President



R. R. Gunderson
1st Vice-President



W. H. Huffman
2nd Vice-President



M. H. Dick
3rd Vice-President



B. M. Stephens
4th Vice-President



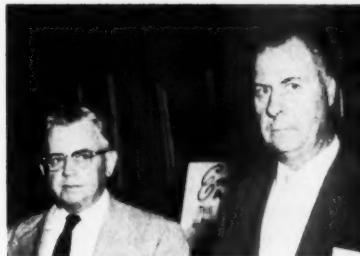
T. M. von Sprecken, asst. to ch. engr., Southern; J. S. Hancock, br. engr., Detroit, Toledo & Ironton; W. H. Bunge, asst. engr., MP Lines; W. F. Martens, gen. fore. b. & b. and w. s., Santa Fe.



G. S. Crites and E. H. Barnhart, both retired division engineers, Baltimore & Ohio, were carrying copies of *Railway Track & Structures* for September.



J. E. South, asst. ch. engr., East. Region, PRR; and E. S. Birkenwald, engr. br., West. Lines, SOU.



L. W. Brown, supervisor b. and b.; and R. H. Reid, assistant supervisor b. and b.—both C&O.



R. A. Fichter, American R.R. Curvelining Co.; J. A. Goforth, maint. engr. Clinchfield.

employees, the committee discussed the various ways in which the extensive use of diesel power has affected the organization and operation of the water service forces.

It noted that, when the diesel-electric locomotive made its appearance on the American railroad scene, it was generally assumed that the end was in view for the "annoying problem of water treatment." This has proved to be an erroneous assumption, said the committee. It is true that diesel locomotives do not require water in as large quantities as steam locomotives, but the water used must be of high quality and conditioned for use in steam generators and

cooling systems. For this reason, the water service forces "still play an important role in maintaining water facilities for diesel power."

A method of buying kiln-dried sand, loading it into moisture-proof metal tank cars and shipping it to various locations where needed was described in a report on sanding facilities for diesel locomotives. This report was prepared by a committee which was headed as chairman by R. H. Patterson, supervisor bridges and buildings, St. Louis Southwestern, Pine Bluff, Ark. The method described was proposed for use on a western road. The sand would be unloaded from the containers by an air-operated sand ejector of new design. It is estimated that it will cost only 25 cents per ton to unload sand in this manner.

This committee noted that about one-half to one-third less sand is required for diesel units than with steam engines. "This is because steam engines used a large portion of their sand to clean flues, and that due to differences in the characteristics of steam locomotives and diesel units, less sand is required when starting the pull of a train with the diesel units. Also, diesel units perform some of their braking with dynamic brakes and sand is not required."

The effect of dieselizeation of motive power also came in for discussion in a report on the heating and ventilating of diesel shops. Chair-

man of this committee was D. E. Perrine, assistant chief engineer, Chicago & Western Indiana—Belt Railway, Chicago. Several types of heating and ventilating systems may be used successfully for maintaining employee comfort and efficiency said this committee, but each particular project should be studied to determine the most suitable system. It should be kept in mind, it said, that the proper removal of diesel exhaust fumes requires the exhaustion of a large volume of air which must be replaced with fresh air. "Low installation costs should not be the governing factor in determining heating and ventilating requirements."

"The advantages of a welder located on a division are many, but one job not often mentioned is that of equipment repairs," said a committee reporting on welding applications in bridge and building work. E. M. Cummings, division engineer, Baltimore & Ohio, Garrett, Ind., was chairman of this committee. It went on to say that all the maintenance-of-way departments are requiring more and more power machinery and that these machines occasionally require repairs, which "if, not handled promptly, can cause costly delays to the railroad. Having available the service of a complete welding outfit and competent welder will often enable the machine to be repaired in a few hours, so that the work will not be excessively delayed."

WHO THEY ARE

The titles and railroad connections of the new officers are: J. A. Jorlett—assistant engineer, bridges & buildings, PRR, New York; R. R. Gunderson—engineer maintenance of way, WM, Baltimore, Md.; W. H. Huffman—assistant engineer maintenance, C&NW, Chicago; M. H. Dick—editor, *Railway Track & Structures*, Chicago; and B. M. Stephens—assistant chief engineer, T&NO, Houston, Tex.

New directors elected are: W. H. Bunge, assistant engineer, MP Lines, Houston; E. R. Schlaf, assistant superintendent water service, IC, Chicago (both re-elected); and G. W. Benson, superintendent bridges, Central of Georgia, Macon, Ga.

Directors with terms expiring in 1956 are J. F. Warrenfells, assistant division engineer, SAL, Raleigh, N. C.; H. D. Curie, master carpenter, B&O, Garrett, Ind.; and J. M. Lowry, chief engineer, SLSW, Tyler, Tex.



WHAT'S THE ANSWER?...

... a forum on track, bridge, building and water service problems

Water Hammer and Quick Acting Valves

Quick-acting valves are frequently used on the fill-up hoses at diesel watering stations. How can water hammer, resulting from the operation of these valves, be controlled or eliminated? Explain.

Elimination Is Best Solution

By HERBERT O. ADKINS

General Supervisor Bridges & Buildings,
Denver & Rio Grande Western,
Denver, Colo.

Perhaps the most effective method of eliminating water hammer resulting from quick-acting valves is the elimination of such valves. However, we certainly would not advocate the use of slow-closing gate or globe valves of the rising stem variety that all too frequently leak around the valve-stem packing.

There are many alternates to these valves on the market today, for instance, the single-wedge disc gate valves of the non-rising-stem type which can be repacked with the valve wide open.

Another alternate is the installation of filler-type valves that are, more or less, especially built for just such service. These valves cost more, but are positive in their action and sufficiently adjustable flowwise to permit the operator to set the valve for various rates of flow. As an aid to this setting, they are usually supplied with four or five graduations on the handle-setting device. This device does not require the operator to hold it during filling. It can be set to fill slowly or rapidly according to the quantity of liquid required. This permits the operator to engage in other duties while the tank-filling process is going on. These valves do not close automatically. However, there is still another valve on the market that will close automatically when installed with special-filling apertures. When released by hand, the valve mechanism is so constructed that it causes a gradual shut off without shock or hammer. This is possibly the surest, and in the long run, most satisfactory method of preventing hammer.

We might take another route and attempt hammer elimination where quick-opening and closing valves are a must. One method which was found to be effective on fuel-oil lines is the installation of air chambers made up of 8-in steel pipe, 5 ft long, which are installed vertically in the pumphouse or on the line nearer the dispensing station. This should work well on any fluid line. It is not a new idea as it has been used in reciprocating pumping plants for years.

Oversizing of distribution systems or closer sizing of filling lines and valves to meet actual requirements will also reduce hammer tendencies that are directly proportionate to flow velocity and vol-

ume. Any excessive number of abrupt turns should be avoided in the supply and distribution system. This keeps down line losses from friction which requires the maintenance of line pressures higher than necessary. Reduction of this line pressure will also reduce shock.

Where possible, loop lines will aid in maintaining more uniform pressure in the system. They will also assist in the distribution of water hammer by sending shock to all points of active discharge.

Suggests Surge Tank

By J. M. LOWRY

Chief Engineer, St. Louis Southwestern,
Tyler, Tex.

None of our facilities for watering diesels employs quick-acting valves on water fill-up hoses, but quick-acting valves are used on the fill-up hoses for our diesel fuel.

Although we have not experienced the water-hammer problem at any of our diesel-fueling facil-

Answers to the following questions are solicited from readers. They should be addressed to the What's the Answer editor, Railway Track and Structures, 79 W. Monroe St., Chicago 3, and reach him at least five (5) weeks in advance of the publication date (the first of the month) of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered in the January Issue

1. Should fence repairs be made by section forces or by gangs specially organized for that purpose? Why? When should this work be done? Explain.

2. When bumping posts are installed at the ends of stub tracks in passenger stations, freighthouses and shop buildings, what should be the minimum distance between the striking plates of the posts and the walls beyond the ends of the tracks? Why? Explain.

3. Should the movement of work trains on the job be controlled by the supervisor in charge of the work train or the train crew? If the train crew, what liaison should be established between the supervisor and the crew to prevent misunderstanding? Explain.

4. How often should the cables of cranes, derricks or pile drivers be inspected? What factors determine when these cables should be replaced? What precautions must be taken to assure proper installation of the cables? Explain.

5. Where trucks are assigned to track welders, what power tools should be furnished them as standard equipment? Why? Explain.

6. What is the minimum practical standard of hardness for water used in the cooling systems of diesel locomotives? In steam generators? What, if any, are the advantages of so-called "zero" water? Its disadvantages? Explain.

ties, it is readily conceivable that this problem could assume prominence in some cases. These quick-acting valves close the outlet of the pipe suddenly, arresting flow velocity and transforming the kinetic energy thereof into dynamic pressure which, in effect, is water hammer.

A logical approach to the elimination of water hammer would be

to eliminate the cause. This could be done by removing factors conducive to water-hammer conditions. This can be accomplished by the use of slow-closing gate valves where practicable. When conditions necessitate the use of quick-acting valves, the destructive effects of water hammer can be greatly alleviated by use of a surge tank arrangement placed near the outlet.

Basically, this may consist of a pipe of the same diameter as the delivery pipe, vented from the delivery line and enclosed in a small tank of varying dimensions which also discharges into the delivery line. This arrangement prevents the loss of momentum of the water when the flow is suddenly arrested, thereby eliminating the destructive effect of water hammer.

Inspection of Switches

What measures should be taken to insure thorough inspection of switches and switch stands? Who should be responsible? Which details should receive attention? Why? Explain.

Frequent Inspection a "Must"

By L. E. DONOVAN

**Assistant Engineer Maintenance of Way,
Illinois Central, Chicago, Ill.**

All switches and switch stands must be installed and maintained in accordance with the railroad's standards and must be inspected frequently to insure that good maintenance is not being neglected.

On our railroad, each section foreman, track inspector and supervisor of track understands the importance of this. While there are certain instructions covering their periodic inspections, any one of these employees should never miss an opportunity, while passing a main-line switch, to look it over carefully and, if need be, stop and make any necessary corrections. This is true of the division engineer, as well as the assistant engineer maintenance of way and the engineer maintenance of way himself, who, while on motor-car trips over the line, very frequently have occasion to and do make switch inspections.

Thorough inspections, however, are made periodically by the track inspector or, in the absence of one, by the section foreman. Section foremen and track inspectors (where track inspectors are employed) share a joint responsibility in this regard. The track inspector carefully inspects the entire turnout, reporting to the foreman any irregular conditions found which he is not in a position to correct. In any event, the section foremen are not relieved of the responsibility for the condition of switches on their respective sections, and they, in the absence of track inspectors, make the inspections.

Supervisors of track thoroughly inspect all main-line switches once a month, in accordance with our Maintenance of Way Rules, and are required to report their findings quarterly.

This report is on a specified form, as illustrated. The completed report is submitted to the division engineer who, in turn, forwards it to the engineer maintenance of way. The report reflects the conditions as found by the supervisor and not after repairs are

made. Where a switch is found to be in other than perfect condition the supervisor reports on the back of the form the action taken to ensure repairs. Any irregularities found are corrected by the section foreman without delay.

In addition to this, we sometimes make what is known as a "take apart" inspection. This inspection is exactly what the name implies. All parts of the switch and stand are taken down, very thoroughly inspected, and, if in good condition put back. This type of inspection has been known to pay dividends, and some defects have been found which otherwise would not have been visible during regular inspections.

Duty of Foreman and Supervisor

By H. S. CHANDLER

General Supervisor Track, Chesapeake & Ohio, Richmond, Va.

On non-signaled territories, the track foreman and supervisor of track are responsible for switch inspections. Inspections by the section foreman are made every two weeks. Reports of these inspections, made on a form stating the true condition of each main-line switch, are mailed to the supervisor of track.

The supervisor of track makes an

FORM used by the Illinois Central to report the inspection of switches provides space and a check list which insures that each detail of the switch is included in the inspection.

inspection of all main-line switches every three months and forwards the report of this inspection to the division engineer. This report form shows the condition of line, surface, timber, gage, bolts, cotter keys, switch points, frog, guard rails, adjustment, fit and wear.

The same inspection is made in signal and CTC territories by the section foreman together with the signal maintainer. In all signalled territories the section foreman, signal maintainer, supervisor of signals and supervisor of track all share in the responsibility of seeing that all switches are properly maintained for the safety of all concerned. Switches are also inspected by the signal maintainer and the section foreman at various times between regular inspections. No report is made of intermediate inspections.

Inspections Must Be Thorough

By E. S. SHANDREW

General Foreman, Southern Pacific,
Oakland, Cal.

The inspection and repair of a switch must be thorough and

painstaking. A mere visual inspection will not serve. Therefore, I think the inspection should be made by the roadmaster and the section foreman. Yard as well as main-line turnouts should be included.

It is not sufficient merely to inspect the fit of the point rails. The firmness of the fit should be tested. This may be done by seeing if the point can be pried open with a bar. An even better inspection can be made by inserting a strip of $\frac{1}{4}$ -in strap iron between the stock rail and the point and then throwing the lever of the switch to bring the switch point against this test strip. Any looseness which is disclosed by this test must be corrected immediately. This correction may require the renewal of worn parts unless these parts are adjustable.

The only proper and safe method of determining the condition of the movable parts of a switch, such as the connecting rods, clips, bolts, etc., and of locating defects and lost motion in the switch-stand mechanism is to apply one of the tests described above. Visual inspection of the switch points may indicate a perfect fit. However, the test may show that there is enough

total lost motion to permit the switch to spring a sufficient amount to cause a derailment. This lost motion may be the sum total of a small amount of play at each of half a dozen different connections.

The gage of all switches should be tested by means of the track gage. If the switch is equipped with adjustable rail braces any widening of gage may be easily corrected.

If a switch point is broken or worn to the point where it must be renewed, special attention must be given the stock rail to determine whether it should also be renewed at the same time. In case the stock rail is worn so that the thin point of the switch point will not fit the head of the old stock rail, then the stock rail should also be renewed. As a matter of fact, it is considered good practice to renew the stock rail whenever a new point is applied to a main track switch.

The work around a switch is not complete until any broken bolts have been replaced, locknuts have been applied, nuts turned home to a firm bearing and cotter pins applied where one belongs. This includes the heel joints, frog and guard rails.

Radiant Heating for Railway Buildings

What are the relative advantages and disadvantages of installing radiant heating in railway buildings? Why? Explain.

Makes All Floor Space Usable

By W. G. HARDING

Architect, Wabash, St. Louis, Mo.

With radiant heating there is nothing in the room to get in the way. Wall spaces are unbroken, furniture and rugs may be placed where convenience and taste dictate and not as the heating equipment requires. All of the floor space is usable.

The floors are warm and there are no layers of cold air near the floor nor are there layers of "burned-out" or overheated air near the ceiling. There are no drafts due to convection currents.

Rooms and furniture remain cleaner. Conventional heating systems, to be effective, must set up strong currents of warm air to carry the heat around the room. These air currents carry dust and dirt which are deposited on curtains, furniture, walls, etc. This makes fre-

quent cleaning or redecorating necessary.

The cost of installing a radiant heating system is comparable to that of a conventional, steam, hot-water or warm-air system. No basement or cellar is required for the installation of a radiant-heating system.

The cost of operating radiant-heating systems has been reported as somewhat lower than that of conventional hot-water systems. Water temperatures of 140 deg F are used whereas temperatures as high as 210 deg are used in conventional systems.

Radiant-heating systems also offer certain disadvantages. They are not adaptable for combination heating-cooling systems as are the forced warm-air systems. However, several experiments are in progress to study the feasibility of using chilled water in radiant piping for cooling during hot weather.

Warming up, or pick up, of the radiant heating system is not as rapid as in several types of conventional systems. However, a little of this disadvantage may be overcome by using temperature controls which are actuated by outside temperatures.

Advantages Outweigh Cost

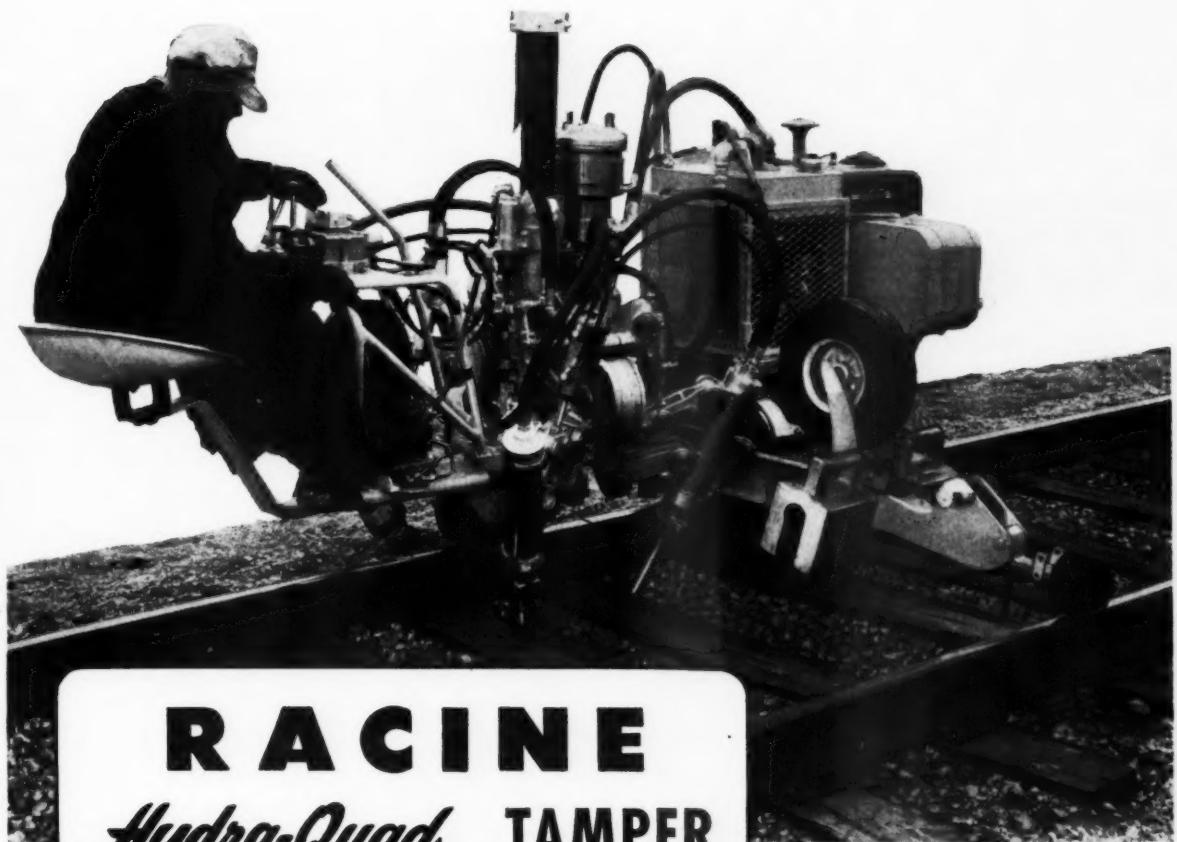
By A. B. FOWLER

Superintendent of Construction, Erie,
Cleveland, Ohio

During the past few years, we have installed hot-water floor-panel radiant heating systems in two of our new passenger stations. The heating grids rest on $3\frac{1}{2}$ in of light-weight concrete and are covered with 6 in of reinforced-concrete floor with asphalt-tile or floor-hardener wearing surfaces. One of the stations is located in an area where the temperatures may fall to as much as 20 deg F below zero and the other where the winters may be considered as moderate. The installations have proven very successful at both locations.

Some of the advantages of this type of heating are:

(1) The heating grids are invisible and



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What's the Answer (Cont'd)

they do not take up any room space.

(2) Uniform heating is obtained which results in greater comfort. This is based on the fact that the air temperature, corresponding to conditions of optimum comfort, can be maintained at 70 deg. or less with the panel heating system whereas other conventional heating systems require air temperatures in excess of 70 deg. This results in savings in fuel costs, as these excess temperatures are usually between 72 deg. and 76 deg.

(3) This system warms relatively large areas to comparatively low temperatures as contrasted with the common practice of heating small surfaces to higher temperatures.

(4) A well-designed system should require no maintenance outside of conventional care of the boiler, pump, controls, etc.

The question is often asked whether any damage is done to the floors due to differences of expansion of the materials. Such differences are slight and result in stresses in masonry and tube materials of such small magnitude that they are readily absorbed by the materials in question. To date we have had no damage to the floors at either location. It should be pointed out that in starting a panel heating system, the heat should be applied in three stages and should not be admitted with a sudden surge.

The question of leaks in this type of system is often brought up and deserves mention. A properly installed system that is tested before being covered will not have a tendency to leak and, as a matter of fact, the material surrounding the grids protects them from corrosion.

Care must be taken during construction not to disturb the tubes when placing the concrete for the floor.

Our installations have proven very successful and the advantages of this type of heating, in my opinion, greatly outweigh the small increase in cost of the installation when compared with that of conventional types. Our present inclination is the continued use of the grid-type system.

Cost Is a Factor

By A. A. MELIUS

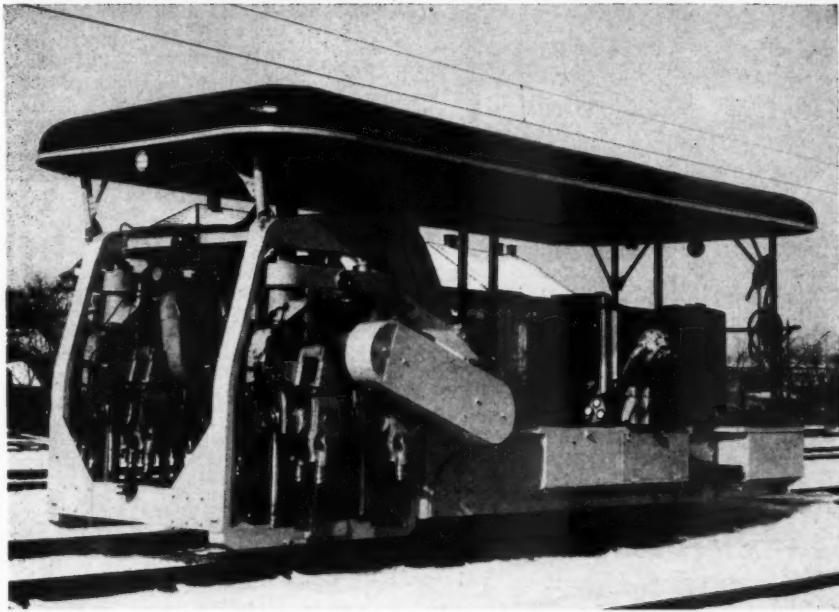
Architect, Northern Pacific, St. Paul, Minn.

Since we have never used radiant heating we cannot use experience as a criterion. However, I hope to use it some day and approve of its application in some places. So far, cost has entered into our decisions

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8. The operation of the machine is regulated by one man only. The exceptionally high tamping performance amounts to 1150 feet per hour.

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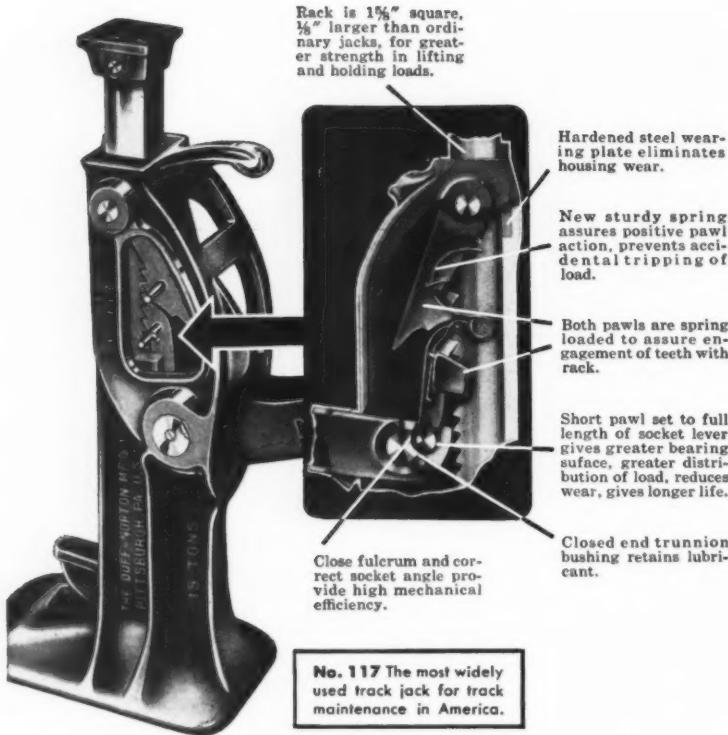
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What's the Answer (Cont'd)

and from our studies I believe such systems would be more costly in this cold country.

Radiant heating should be ideal in large ceilinged areas, such as shops, where warm floors and lower working temperatures are maintained. In shops though, we have machine foundations. Under such conditions piping would have to be divided into areas where it could be changed out and recovered as machinery was shifted. For permanent locations, I think radiant heating systems are ideal.

Does Tight Gage Affect Rail Defects?

To what extent, if any, does tight gage (less than 56 1/2 in) increase the incidence of rail defects (particularly detail fractures) in tangent track? Why? Explain.

Investigation Should Be Pushed

BY H. H. HALL

What's The Answer Editor

This question was phrased with the idea of bringing into open discussion that facet of the shelly-rail problem which is affected by tightness of gage. This column's usual practice of soliciting discussions from qualified experts to supplement voluntary contributions was followed. In this instance, however, neither voluntary contributions or solicited answers were received. But conversations and correspondence with a number of track men points up the timeliness of the problem.

Investigations are underway on a number of railroads and by the AAR research staff, but these have not progressed to the point where conclusions can be drawn. It is important that these investigations be carried to a conclusion as quickly as possible for it is conceivable that they may shed considerable light on the shelly-rail problem.

This reporter's own practical experience and observations, which included an extended tour of duty in connection with the testing of rail on a major railway, leads to the considered opinion that tightness of gage is important, among other factors, in the development of certain



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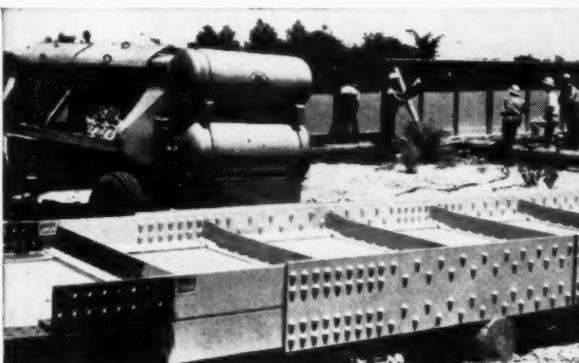


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What's the Answer (Cont'd)

rail defects (particularly detail fractures from shell) on tangent track. Other factors which also affect the development of such defects include certain maintenance practices, wheel and rail contours, tractive characteristics of motive power and physical characteristics of the location—to mention but a few. Published reports of the AREA Rail committee and of the various investigations into the shelly-rail

problem leave little doubt, in the mind of the reader of these reports, that the development of defects of this type are the result of mechanical rather than metallurgical conditions.

The solution of the problem will probably rest with the development of rail so constituted that it will provide increased resistance to mechanical action. Modification of these mechanical actions by change of design and changes in maintenance practices may also figure in the solution.

Emergency Repairs After Washouts

When emergency repairs are to be made following a washout, what factors determine whether a pile trestle should be driven or the opening filled with cribbing? Why? Explain.

Two Factors Determine Method

By R. B. CARRUTHERS

Supervisor of Structures, Texas & New Orleans, Houston, Tex.

When emergency repairs are to be made following a washout, the factors which determine whether the opening shall be cribbed or a pile trestle driven, assuming that men and equipment are available to do either, and that time is the important element, are: (1) The extent of the washout, the depth of the water and whether it is still or flowing; and (2) whether the bottom is rock or mud.

If there is any appreciable depth of water, it is faster to drive the opening. This is because of buoyancy which will make it necessary to weight the cribs in order to sink them. If there is any current, cribs could not be depended upon for safety because of irregularity and subsequent slippage between members of a crib built in moving water.

If the bed of the washout is rock and the water conditions prevent the setting of cribbing for the reasons stated above, the opening can be closed with piling, set big-end down, with the aid of a pile driver or track crane. Piling can also be set small-end down with a track driver and seated under half throttle. The piling should be set in double bents and tower braced, depth of water permitting, and the towers should be longitudinally braced. Before trains are let over the repairs, the piling should be further stabilized with ballast. This should be handled onto the trestle in side dump cars and unloaded over the tower footings.

Local Conditions Govern

By S. K. MASON

Chief Engineer, Texas Mexican,
Laredo, Tex.

The factors that determine whether a pile trestle should be driven or the opening filled with

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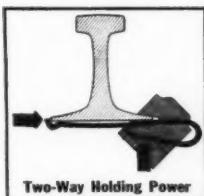
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What's the Answer (Cont'd)

cribbing when emergency repairs are made following a washout are:

(1) The size and character of the stream where washout occurred.

(2) The length and height of bridge washed out, or if the roadbed only is washed out, the height and length of the fill.

(3) The method that would get the line open for traffic in the shortest period of time.

Where short low bridges or pile trestles are washed out, generally the most economical and quickest emergency repair is to fill the opening with cribbing and get traffic restored. Cribbing material is usually available at sections on each side of the damaged area and can be speedily rushed to the job and placed. By solidly flooring the stream bed with ties at each crib, sufficient bearing can generally be secured in the softest mud.

In case all or a part of a high bridge over a running stream is washed out it is doubtful if cribbing could be used. It could not be placed in deep or running water and a temporary pile trestle would have to be driven. We had a case like this on June 30, 1954, when three 175-ft spans of the International Bridge at Laredo, Tex., washed out in the Rio Grande's highest flood in history. A temporary pile trestle was driven using 80-ft piles and traffic was restored in six weeks. The permanent steel structure has since been replaced. Cribbing here would have been out of the question.

The type of emergency repair at a washout must be governed by local conditions. The method of repair used—whether cribbing or piling—should be that one which will get the line open on a temporary basis in the shortest possible period of time. This work can then be followed by permanent restoration of the washed-out structure.

Avoid Trestles if Possible

By L. P. DREW

Assistant Chief Engineer, Union Pacific,
Omaha, Neb.

If a washout is caused by a flash flood or cloudburst, the water will usually recede within a few hours and the opening or damage can be repaired by filling either with or without the aid of cribbing.

On the other hand, if a washout is caused by high water or overflow of a substantial stream and



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What's the Answer (Cont'd)

the high water stage continues for several days, it will, no doubt, be better to drive a temporary trestle so traffic can be resumed before water completely recedes.

With modern dirt-moving equipment it is usually more economical and much quicker to repair a washout by filling than by other means. This is particularly true if adequate fill material is close at hand or can be brought within a short distance.

In some cases, where a considerable length of track has been damaged, it may be desirable to build a "shoofly" around the washed-out portion at a lower elevation so that the embankment can be restored after traffic has been resumed, without working under the inconvenience of handling traffic during the construction period.

Even with the most modern pile-driving equipment, the driving of a trestle across a washout is a slow and tedious process and should be avoided if at all possible. Where

absolutely essential, the trestle should be as short as possible so that the track can be connected up. Then, if it is necessary, the trestle can be extended later by driving through the fill and working under traffic.

If only a small amount of water is to be handled, a series of culvert pipes may be laid or temporary wood boxes constructed to convey the water across the washed-out area and permit construction of a fill, so that the track can be relaid and traffic resumed.

Correcting Short Cross-Level Defects

What is the best procedure for correcting short defects in cross level of $\frac{1}{2}$ in or less on tangent track? On curved track? Explain.

Trowelling Is Best Way

By IRA W. TOY

Roadmaster, Soo Line, Drake, N. D.

We have found that trowelling is the best way of correcting short defects in cross level of $\frac{1}{2}$ in or less on both tangent or curved track. In fact, we have been very successful in taking out short low spots up to 1 in in depth and have also used this method successfully in removing short sags up to two or three inches deep. This last, of course, comes from experience gained as one goes along with the use of this method. Since the question specifically covers the correction of spots of $\frac{1}{2}$ in or less, I will discuss them.

The trowels are made from old, broken or discarded band saws from the saw mills of Wisconsin and Minnesota and from old and worn out No. 2 shovels. The teeth are trimmed off of the saw blades and they are cut to 36-in lengths, so that there are no flaws in the parts that are to be used in the trowels. They should be as close to 6 in. in width as possible. The shovels, which serve as the handles of the trowels, have the blade cut off to leave a triangular section of the blade at the base of the shovel handle. This triangular section is 2 in wide, on either side of the handle, and extends to a point about 5 in below the base of the handle. Three holes are drilled, one in each corner of this shovel blade and corresponding holes are punched in one end of the saw blade. The shovel handle is then riveted to the saw blade to com-

plete the trowel. This work can be done at very little expense in the shops.

If it is found that the blade of the trowel is not stiff enough to hold a load of gravel it can be stiffened by the use of a ball-peen hammer. This is done by peening a line, with a blow every $\frac{1}{8}$ in, down the center of the blade from the handle to the blade end of the trowel.

It is very important that the low spots to be corrected be marked out before troweling is started. We usually mark out a quarter mile or so, that is, whatever work we expect to do that day, or the work that has been planned for a given district. This is necessary because, after one has started to jack up the track it is impossible to tell how it lay in the old bed. If the track is premarked, the work on a given spot will start and end at the right points.

In marking the spots, the foreman picks a man from his gang that is alert and quick in thought and action. This man carries the level board and tells the foreman how low the spot reads. If the track is low on both sides, the higher spot is marked out by eye and this reading is added to the marking on the low side. The foreman sights along the rail and calls out the raise required which the other man measures and marks on the ball of the rail with soapstone. This is done so that the marks will not be erased or worn off by passing trains and the man troweling will know just what material it is necessary to put under the ties. The man doing the

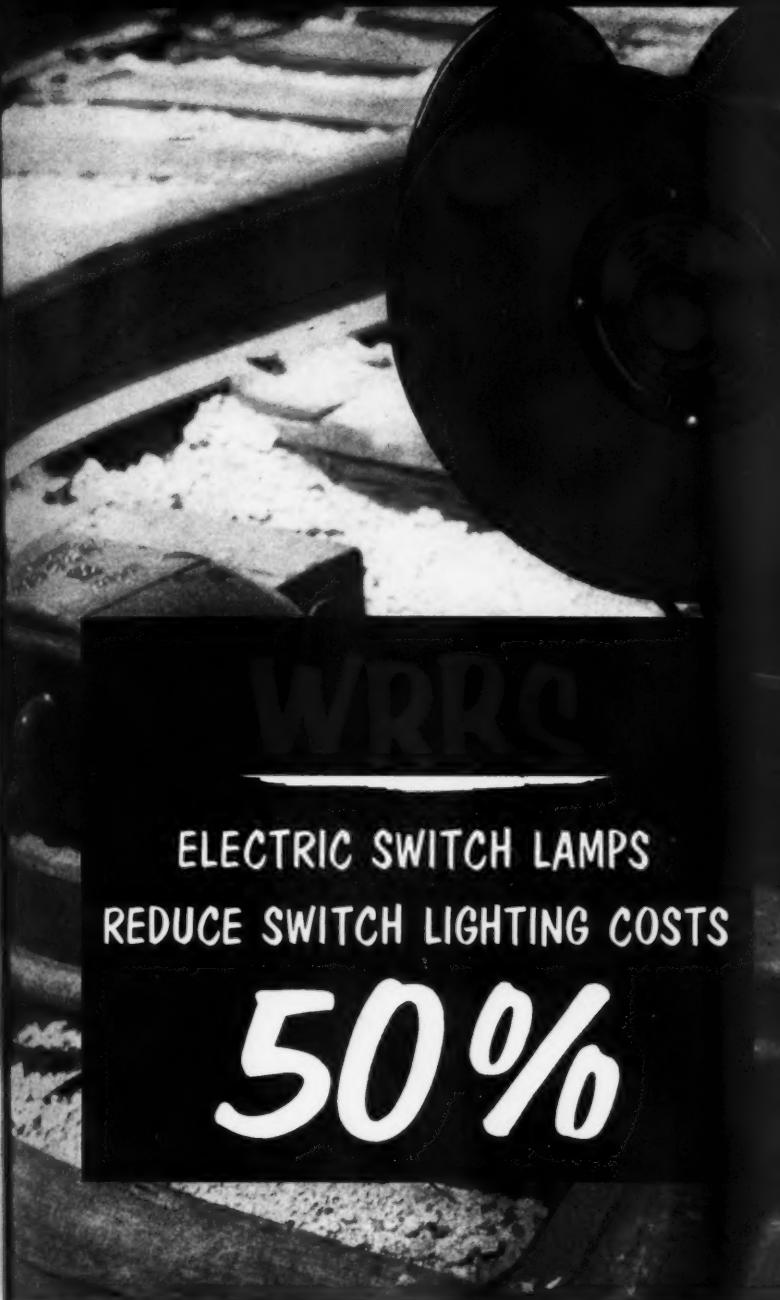
marking must keep his eyes open and if he sees a tie hanging in the spikes or away from the bottom of the rail he must add to the mark what it would take to bring the tie up flush with the bottom of the rail.

The following marks are what most of us use on the Wisconsin Central and the Soo Line to indicate the amount of raise required.

"Duster"	0 $\frac{1}{8}$ in (light)	x
$\frac{1}{8}$ in (full)	- $\frac{1}{8}$ in	/
$\frac{1}{4}$ in	- 1 in	//
1 $\frac{1}{2}$ in	// etc.	

Now this marking is the most important part of the work if you want to do a 100 per cent job. Some foremen try to take out low spots by sighting the rail and jacking it up to where it looks good. They then try to work in enough gravel by working the trowel back and forth under the tie. This results in only about a 60 per cent job. By marking out your spots, and making allowance for the ties that are hanging, with a little experience and ingenuity one can do a 100 per cent job. This is because the old tie bed is not disturbed and what is put under the ties with the trowel is there. For example, a "duster" requires about $\frac{1}{8}$ in of gravel all over the trowel; a light $\frac{1}{8}$ requires about $\frac{1}{8}$ in of gravel all over the trowel; a full $\frac{1}{8}$ in requires $\frac{1}{8}$ in of gravel; $\frac{1}{4}$ in about $\frac{1}{8}$ in; and $\frac{1}{4}$ in will require all the gravel that will remain on the trowel. Thus, for a raise of 1 in you would put under two "halves", and so on, to get whatever combination is called for by the marks. It does not take long for one to get onto just how much to put on the trowel to satisfy the different marks.

While the foreman and his man are marking out the spots, the other men in the gang start digging out the ends of the ties at the spots already marked. This hole should



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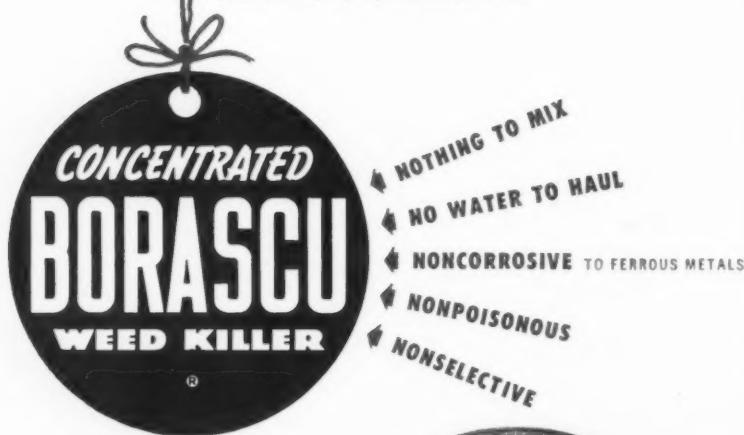


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What's the Answer (Cont'd)

slope from a foot beyond the end of the tie down to the bottom of the tie. The gravel removed should be left in a pile at the outer end of the hole for loading on the trowel when making the raise.

As soon as the foreman and his man have completed their marking they go back and start troweling. The track must be raised somewhat higher than the marks call for. For example, if the marks call for a $\frac{1}{4}$ -in raise there should be at least a $\frac{1}{2}$ -in space between the bottom of the tie and the old bed, in the case of a $\frac{1}{2}$ -in raise an inch of space should be provided. One must watch the raising closely, for if the ballast in the cribs runs easily the raise cannot be so high.

The trowel is loaded by holding it at about an 80-deg angle ahead of the pile of loose gravel. It is then drawn backward through the gravel, leaving the required amount of gravel on the trowel. It does not take long to get the knack of loading the trowel and, if the trowel is loaded too heavily, just a simple turn of the wrist and a little flip of the trowel will reduce the amount. The loaded trowel is then placed under the tie, care being taken not to hit the end of the tie when going in. If this is done the load will slide off of the trowel and into a pile at the end of the tie. After the trowel is positioned under the tie a quick little jerk backward will leave the gravel well spread and in place under the tie.

Trowelling should never be done on more than two ties ahead of the jacks except when feathering out the ends of the spots. When this is done, the last tie trowelled should be marked with a little gravel on the top at the end. In this way the same tie will not be trowelled twice.

The trowelling method can be used in rock ballast if a push car of fine crushed rock is supplied for loading the trowel when making light raises.

Consider Territory First

BY J. T. SHEPHERD, JR.
Roadmaster, Norfolk & Western,
Buena Vista, Va.

Before discussing the solutions that can be applied to this interesting problem, it should first be analyzed. First consideration in such an analysis is the nature of the territory involved. Is it a high or a



Southern Belle

PASSING THROUGH THE OZARKS

In the development of the Kansas City Southern Lines, it took a suave Easterner, an Indian Chief, a German immigrant and a far-sighted lumberman to build the primary roads which today comprise the quickest rail service between Kansas City and five gulf ports — Port Arthur and Beaumont, Texas; New Orleans, Baton Rouge and Lake Charles, Louisiana.

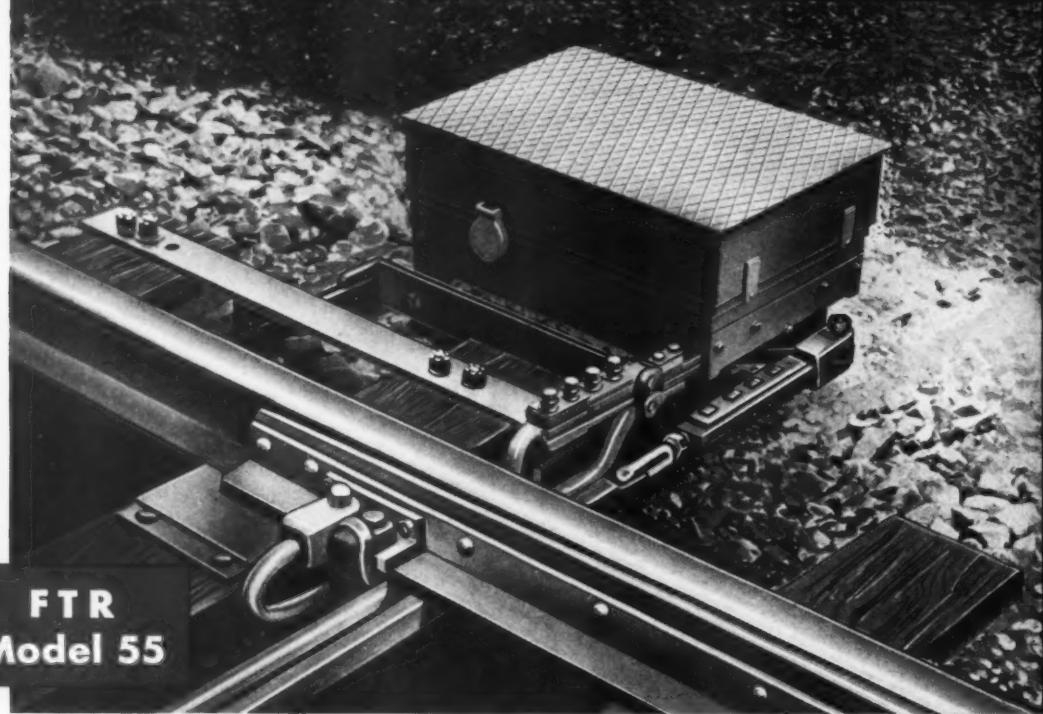
The Kansas City Southern Lines were among the first to use diesel power and to make use of the radio-telephone communication system. Today, the Kansas City Southern Lines have an enviable record, a record made possible by a long range improvement program designed not only to meet current conditions, but to anticipate future needs. The P. & M. Company is indeed honored and proud to serve in part the maintenance needs in the growth of one of our nation's finest railway systems.



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FTR Model 55 Switch Machine is a development of the IT&T System's world-wide experience in engineering and manufacturing communications and signaling systems and equipment to meet the standards of modern railroad operation.

For full information on FTR Model 55 Switch Machine, write to Federal's Railroad Division, Dept. P-486.

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What's the Answer (Cont'd)

low-speed territory? Are the defects in cross level few or many? If there are many defects, consideration should be given to a general resurfacing program. If cross level is defective only here and there, spot corrections should be applied. Next to be considered is the time factor. Are we being pushed for a hurried improvement, or can time be allowed for lasting repairs?

In the light of the above, assuming that general resurfacing is not to be done and corrections must be made in a limited time with a small force, we will describe the best method for smoothing tangent track. First, it is well to go over the entire section with the level board and locate and mark all the places where cross level is defective before applying corrective measures. Next, the necessary corrections should be applied by jacking up the low spots so that they are as much too high as they were previously too low.

Since the time for making the correction is short the ties should be cross tamped. This means that the head of the ties should be tamped on one side while the opposite side of the tie should be tamped in the quarters. A remedy such as this can cover a lot of territory in a day but the results are not lasting. Time permitting, ties should be adequately tamped, especially at the joints where the tamping should extend to the center of the track.

The procedure on curves differs slightly from that employed on tangent track. If the defects are far apart, the level board should be used and low spots corrected as on tangent track. However, closely spaced irregularities present a different problem. In this case the low rail should be smoothed by eye and allowed to settle until firm under traffic. The high rail should then be smoothed to the proper elevation, always pulling as much too high as the rail was originally too low. On curves, the ties should always be well tamped on both sides at both the heads and in the quarters. Greater care must always be taken wherever higher speeds are involved. Such care requires more frequent checks and prompt correction of the defects when they are first discovered.

For safety's sake, the first train over track corrected by the above methods should be slowed down in order to settle the track to the proper cross level.

The THORO System of Masonry Protection

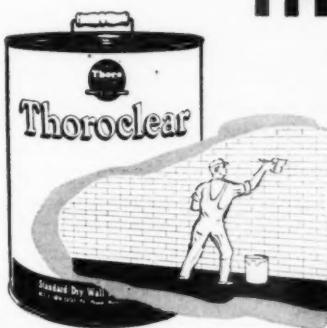
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Ask your dealer about this powerful silicone water repellent developed by years of research by General Electric Company and now produced by us for your protection. *Ask for Circulars No. 30 and 31.*

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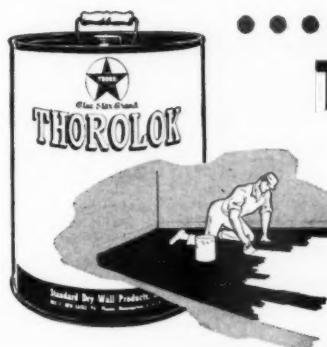
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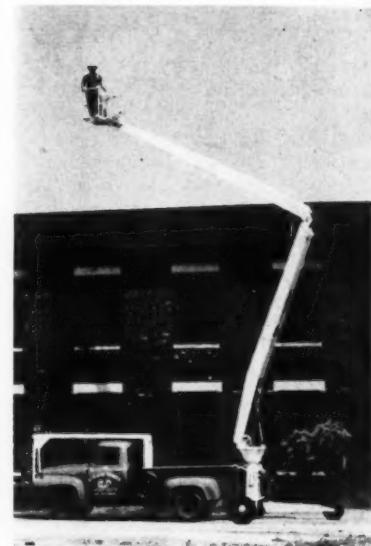
... new, improved equipment, materials, devices

PERSONNEL LIFT

A new mobile hydraulically operated personnel lift known as the "Strato-Tower," has recently been introduced. This machine is reported to facilitate inspection, maintenance and painting of build-

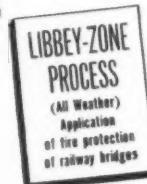
ings, tanks, bridges, catenary towers, etc. The unit is available with boom lengths of from 24 to 100 ft and is designed to handle a working load of 500 lb. If necessary it may be insulated for working around high tension wires.

The equipment is designed for



3 Newsworthy Developments of Special Interest to Track and Structure Executives

1



Primer Coat Eliminated in New All-Weather Improved LIBBEY-ZONE PROCESS

The famous LIBBEY-ZONE PROCESS for bridge deck fire protection is now a *one-coat* application. Formerly primer and asphalt-asbestos binder were separate applications, followed by the gravel aggregate. Now both binder and primer are combined, cutting time and cost of application by nearly one-half. The new material, ZONE Heavy-Duty Coating #2 (AA), is available for immediate shipment.

2



Major Line Officially OK's FIREPLATE Tests Prove Efficiency of Fire Retardant Coating

FIREPLATE* has just been given full acceptance by one of the nation's largest systems. FIREPLATE is now being applied to a major portion of this line's wooden bridge and trestle structures. FIREPLATE is the specially developed coating for vertical portions of wooden structures, protecting them against brush and grass fires at ground level.

3



ZONER** Tie Shield Now Completely Self Sealing

Formerly a "smear" of asphalt binder was required to seal the ZONER** Tie Shield to the tie. This extra operation has now been eliminated; the new, improved ZONER Shield is completely self-contained and self-sealing. It is only necessary to position on the tie and then lay tie plate and rail in the usual manner. Another labor and cost savings from ZONE.

For information, samples or engineering data on any of the ZONE COMPANY Rail Products, please write to the *Rail Products Division*. We welcome your inquiry.

The ZONE Company

RAIL PRODUCTS DIVISION
Box 789, Fort Worth 1, Texas

mounting on the rear of a one-ton truck for outside use or on a forklift truck if used indoors. When mounted on a truck it has an over-the-road traveling height of 9 ft 4 in. It consists of a hinged boom which supports a working platform. The boom has a supporting pedestal, equipped with three folding outriggers which are extended when the equipment is in operation. The truck or other mount acts as a fourth outrigger.

The raising and lowering of the outriggers and vertical movement of the boom is effected through the operation of hydraulic cylinders and pistons. The tower rotates on the pedestal through an angle of 280 deg. Dual controls are provided for operation, one located at ground level and one on the platform level.

The hydraulic pump, powered by a 6-hp Wisconsin engine, is of the Vickers vane type and develops a maximum pressure of 1500 psi. The unit is arranged so that optional power may be supplied by means of an electric or air motor should such operation be desirable. Set-up time of the equipment from arrival at the job is reported to be approximately 5 min. *Strato-Tower Division, Elkhart Welding & Boiler, Inc., Elkhart, Ind.*

LIGHT-DUTY TIE PAD

A NEW 5-PLY laminated tie pad, known as LD-5, has been announced by the Tie Pad Division, Bird & Son, Inc., East Walpole, Mass. The new pad, designed for lighter traffic conditions, is said to

include all the features characteristic of Bird's standard-duty pad SD-5. It is claimed to have a high capacity to absorb shock and vibration. An announcement states the pad "is of strong construction, insures mildew and vermin-proofing, and embraces the sealing characteristics so essential to proper pad performance."



**AIR-COOLED
DIESEL ENGINE**

A FOUR-CYCLE, air-cooled, solid injection diesel engine, with a rating of 15 hp at 2,300 rpm, which was formerly manufactured exclusively as a prime mover for a 5,000-watt diesel-electric generating plant, is now being offered as a separate item. The engine is a product of D. W. Onan & Sons, Inc., Minneapolis, Minn. Known as model DRP, it is of 4-cycle opposed 2-cylinder design which is said to make it exceptionally smooth running, while the air-cooling feature eliminates the necessity of maintaining a radiator, fan belt, etc. The engine has a 3½-in bore, 3½-in stroke and 67.3-cu in piston displacement. The compression ratio is 17.3 to 1 and the unit weighs 516 lb. The crank shaft and connecting rods are of forged steel, pistons of Vanasil aluminum alloy and the exhaust valves and seats are of Stellite. The unit is equipped with full-pressure lubrication. The engine is also equipped with a 12-volt battery-charging generator and a 12-volt electric starter as standard equipment. Other standard accessories include a throttle-lever template, timing gage and instruction manual.

Optional accessories include electric-glow plugs and intake pre-heaters (for cold-weather operation), muffler, fuel tank and crank-shaft extension.

(Continued on page 82)



Put 19 mph speed into all your tractor work

BIG, LOW PRESSURE TIRES give Tournatractor advantages of speed and mobility you cannot match with crawler-tractors. With 19 mph forward, 8 mph reverse speeds, it will complete many right-of-way maintenance jobs 2 to 3 times faster than slow-moving crawlers.

Because it drives job-to-job under its own power, Tournatractor will also frequently eliminate need for work train and crew. Tournatractor starts to job at moment's notice...saves delays of loading and unloading. It travels by highway or along right-of-way. It straddles rails, tires do not damage ties, rail spikes-and-plates, switches, or trip automatic block signals. Rig crosses bridges, trestles...takes shortest route to next job...goes right to work.

Handling slides, washouts and other emergency dozing is fast work for Tournatractor. Other quick jobs: repairing washouts...clearing right-of-way...spreading ballast...stockpiling

With addition of V-type plow, Tournatractor plows snow...opens yards, sidings, loading tracks, or access roads. Electric-control Snow wing available for benching.



ing cinders, ballast, or other materials...aligning track...daylighting curves...filling in bridge approaches...trimming side slopes...grading for drainage...rooting out brush and weed growth.

Tournatractor's speed also pays off on scraper push-loading. For big dirt-moving jobs, rig *pulls* scrapers, sheepfoot rollers, wagons, or other heavy equipment. Tournatractor's dependable electrical system also is source of emergency electric current.

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15 ton capacity. The jacks set much more firmly and stand straighter under tie (without damage) or rail, due to large area toe lifts. Trip from either side. Two models have light weight aluminum housings.

ALSO: Tie removers and replacers.



Standard Speed BRIDGE JACK

The new A2515 25-ton jack has an aluminum alloy housing, which weighs only 40 pounds. 9-in. lift eliminates re-setting in bridge work. Recommended for use with jack support.

ALSO: A complete line of hydraulic jacks and pullers.



Versatile BRIDGE JACK

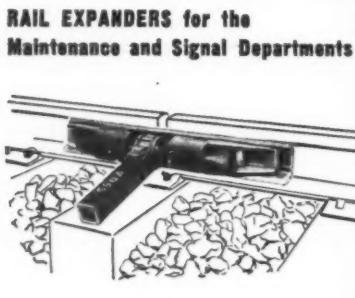
Lifts, pushes, pulls 15-tons on cap, toe or bolt attachment. Ideal for shimming, lining, painting and replacing timber decks. Two base sizes to fit between ties. Ratchet lowering for safety. Double socket permits use in close quarters.

ALSO: Push and pull jacks for piling.



Time-Saving TIE SPACER

Straightens, Spacers Ties. Pumps Rails. Easily applied and removed. Slides along top of rails.



RAIL EXPANDERS for the Maintenance and Signal Departments

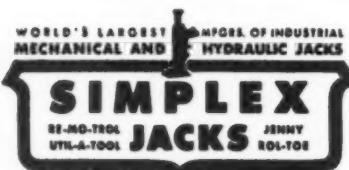
Permits one man to replace a rail pounding crew! For lining crossings and switches, pushing or pulling continuous rail, controlling expansion or contraction with no interruption of service. With lever socket locked down, nothing protrudes above rail head.



Pole Pulling and Straightening Jacks for the Signal Department

Two sizes, 5 and 15 tons for pulling or straightening all sizes of poles. Pivots on base, when desired, to any angle. Can also be used for guy wire tightening or for pulling underground cable. Model A1538—15-ton capacity—available with aluminum housing which reduces weight 35 pounds.

ALSO: Cable Reel Jacks for drums 30- to 96-in. diameter.



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in Bulletin RR 55

TEMPLETON, KENLY & CO. • 2543 Gardner Road, Broadview, Illinois

The Month's News Railway Personnel

General

Albert W. Schroeder, vice-president and general manager of the Chicago & Eastern Illinois, has been elected vice-president in charge of operations of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn. Born in



Albert W. Schroeder

Eustis, Nebr., 38 years ago, Mr. Schroeder was graduated from the University of Nebraska in 1938, with a degree in civil engineering. He was employed by the Nebraska Department of Roads & Irrigation before entering railroad service with the Chicago, Burlington & Quincy in May 1939. While with the Burlington he served successively as junior engineer, track supervisor, roadmaster, supervisor of system and assistant to engineer of track. He joined the C&EI in March 1949 as chief engineer, was named superintendent in December 1950, and general manager in February, 1953. His promotion to vice-president and general manager followed in June 1954.

Engineering

James W. Thrasher, assistant engineer for the Milwaukee-Kansas City Southern Joint Agency at Kansas City, Mo., has been promoted to division engineer, succeeding **Henry H. Salisbury**, who has been appointed assistant to the general superintendent of the agency.

James G. Sinclair, assistant division engineer on the Southern Pacific at Bakersfield, Calif., has been promoted to division engineer of the San Joaquin division, with the same headquarters, succeeding **J. S. McCauley**, who has been transferred to the Yuma division with headquarters at Los Angeles. **Alan D. DeMoss**, assistant division engineer at Stockton, Calif., has been appointed senior assistant division engineer on the

Salt Lake division, at Sparks, Nev., succeeding **J. E. Dakin**, who has been transferred to the San Joaquin division at Bakersfield. **Russell E. Frame** has been appointed senior assistant division engineer of the Yuma division, with headquarters at Los Angeles.

J. W. McGlothlin, who has been appointed division engineer on the Milwaukee Road at Aberdeen, S. D. (RT&S, Sept., p. 92), was born on July 7, 1918, at Cabool, Mo. After graduating from the University of Missouri in 1946 with a Bachelor of Science degree in civil engineering, he entered the service of the Milwaukee on July 1 of that year as an instrumentman at La Crosse, Wis. He later served as assistant engineer and assistant division engineer at that point, holding the latter position at the time of his promotion to division engineer.

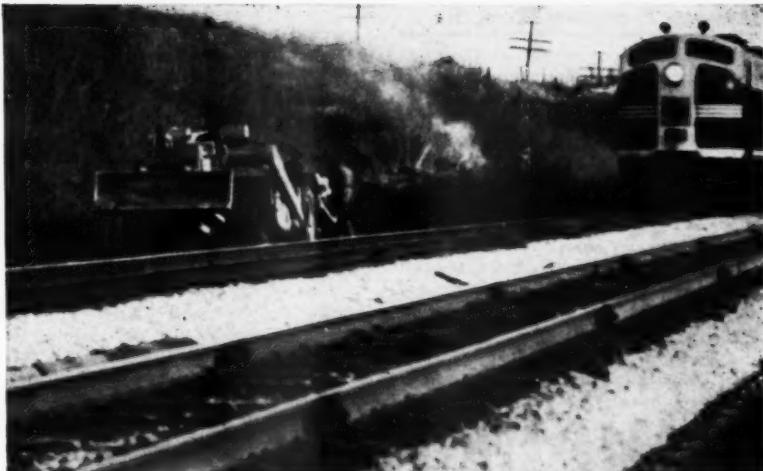
John L. Southard, who has been appointed assistant office engineer on the Chesapeake & Ohio at Detroit, Mich. (RT&S, Sept., p. 92), was born on November 26, 1901, at Marysville, Ohio. After studying mining engineering at Ohio State University, he entered railway service on January 1, 1925, as a chainman on the Hocking Valley (now part of the C&O), at Columbus, Ohio. After serving successively as rodman and instrumentman, he was appointed assistant cost engineer at Marion, Ohio, in 1929, later serving in the same position at Walbridge, Ohio, and Columbus. In 1940, Mr. Southard was made track supervisor, and in 1944 he became assistant division engineer. He was holding the latter position at the time of his recent appointment as assistant office engineer.

S. E. Vick, engineer maintenance of way of the Charleston & Western Carolina (an affiliate of the Atlantic Coast Line), with headquarters at Augusta, Ga., has been appointed engineer maintenance of way of the Southern division of the ACL, with headquarters at Jacksonville, Fla.

John R. Oyarzo, acting principal assistant architect of the Southern Pacific with headquarters at San Francisco, Calif., has been appointed acting architect with the same headquarters, succeeding **W. F. Meaney**, who has been appointed special architect assigned to special duties. **Floyd A. Knudtson** has been appointed acting principal assistant architect to succeed Mr. Oyarzo.

M. P. Anderson, assistant chief engineer on the Monon at Lafayette, Ind., has been appointed chief engineer at that same point, succeeding **L. F. Racine**, who has retired. **C. M. Bowman**, engineer maintenance of way, replaces Mr. Anderson as assistant chief engineer. The position of engineer of maintenance of way has been abolished.

W. C. Wallis, assistant division engineer on the Milwaukee at Aberdeen, S. D., has been transferred to Tacoma, Wash., succeeding **B. H. Bobbitt**, who has been transferred to Marion, Iowa. **F. L. Striebel**, assistant engineer at



Careful on-the-job time studies taken over a period of 8 years show the 7-*yd.*, 28 mph "D" loads and hauls so fast it moves more dirt under almost every condition and on almost any length haul than larger 8 and 11-*yd.*, crawler-drawn scrapers. Ask for a demonstration. Prove the "D's" advantages to yourself.

Put wasted hours to work

HOW MUCH of your maintenance budget did you spend last year for work train service plus wasted waiting time while work crews watched the trains go by? Add in, too, the time for loading and unloading, time for blocking to take crawlers over tracks, time shovels sit idle while waiting for trucks or cars.

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One man drives this load-haul-and-spread earthmover anywhere, anytime. Big rubber tires travel over any route...along tracks, over trestles, across yards or fields...on paved highway or back roads. Scraper bowl easily carries tools,

supplies, and extra fuel supply. Top speed is 28 mph.

For small scattered jobs, the "D" self-loads around 5 cu. yds. as a "one-man" dirtmover. When you have volume yardage to move, you bring in a fleet of "D's", and use a pusher to heap in 7-yard capacity loads. Or, Tournapulls can work in pairs, push-loading each other with dozer blades.

Whatever your loading method, this is the fastest, handiest off-road maintenance tool ever to hit the railroad field. It will save you more time and more money on dirtmoving assignments, than any equipment you've ever put on your budget. Send coupon for all the facts.

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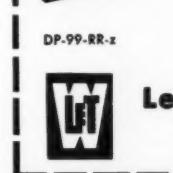
20-page book shows how the 7-*yd* self-loading D Tournapull cuts time and costs on right-of-way maintenance. Send coupon for your free copy. No obligation. Also ask to see our 16 mm. full-color movie, "Clear the Track."

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LeTourneau-Westinghouse Company

PEORIA, ILLINOIS
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Railway Personnel (Cont'd)

Aberdeen, has been promoted to assistant division engineer at that point, to replace Mr. Wallis. **R. J. Brueske**, assistant engineer at Marion, was named assistant division engineer at La Crosse, Wis.

C. F. Parvin, division engineer on the Pennsylvania at Altoona, Pa., has been appointed engineer, maintenance of way, Western region, with headquarters at Chicago. **G. Baylor**, division engineer at Philadelphia, replaces Mr. Parvin at Altoona, and **E. E. Zacharias**, division engineer, special duty, in the office of

the chief of passenger transportation, succeeds Mr. Baylor at Philadelphia. **H. D. Sipe**, assistant division engineer at Cleveland, Ohio, has been promoted to division engineer, special duty, succeeding Mr. Zacharias. **D. A. Sempsrott**, supervisor track at Washington, D. C., has been promoted to assistant division engineer at Cleveland, replacing Mr. Sipe. **A. S. Barr**, division engineer at Chicago, has been appointed division engineer at Baltimore, Md., succeeding **J. A. Chubb**, who has been assigned to special duties. **H. B. Miller**, assistant division engineer at Altoona, has been promoted to division engineer at Chicago,

replacing Mr. Barr. **W. Glavin**, supervisor track at Trenton, N. J., has been named assistant division engineer at Altoona, succeeding Mr. Miller.

Clarence Baker, assistant construction engineer of the Missouri Pacific, has been appointed engineer of design, with headquarters at St. Louis, succeeding **J. C. Boston**, who has resigned to accept a position with a contracting firm. Mr. Baker was born at Carbondale, Ill., on July 16, 1902, and is a graduate of Rice Institute with a Bachelor of Science degree in mechanical engineering. He started with the Missouri Pacific lines as a rodman in the engineering department at Houston, Tex., in June, 1922, while still in college. After graduation he served as an instrumentman, assistant engineer and roadmaster. He was appointed assistant division engineer at Kingsville, Tex., in February, 1942, and was advanced to principal assistant engineer at Houston in May of the same year. In 1948 he became superintendent of construction on a large project, which position he held until December, 1954, when he was advanced to assistant construction engineer.

Edwin O. Williams, who has been appointed division engineer of the Rio Grande division of the Southern Pacific, with headquarters at El Paso, Tex. (RT&S, Sept. p. 94), was born on March 14, 1903, at Terrell, Tex. Mr. Williams obtained his engineering education at Northwestern University, graduating with a Bachelor of Science degree in 1927 and with a Civil Engineering degree in the following year. Mr. Williams entered

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Edwin O. Williams

railway service in August 1928 as a rodman on the Southern Pacific, being promoted to instrumentman in January 1929. Later he served as engineer-statistician and draftsman, being appointed junior engineer in January 1938 and assistant engineer in August 1941. After serving for a brief period as general track foreman, Mr. Williams was made assistant division engineer in October 1942. Following World War II, he served for a time as head estimator and in September 1947 he became office engineer, being promoted to senior assistant division engineer on May 16, 1952. He was holding the latter position at the time of his promotion to division engineer.

THE LINCOLN ELECTRIC COMPANY

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The World's Largest Manufacturer of Arc Welding Equipment

John E. Fanning, who retired as assistant to chief engineer of the Illinois Central (*RT&S*, Sept., p. 86) was born on August 13, 1885, at Buena Vista, Miss. After graduating in 1905 from the University of Mississippi with a B.S. degree in civil engineering, Mr. Fanning



John E. Fanning

entered the service of the Gulf & Ship Island (now a part of the IC) as a transitman, later serving as assistant engineer and supervisor. In August 1919 he became chief engineer of the Mississippi Central and the G&SI, and in August 1920 he was made an assistant engineer in the construction department of the IC. In August 1921 he was promoted to roadmaster on the Iowa division, and two years later he was appointed district engineer in which capacity he served on both the Western Lines and the Southern Lines. From September 1931 to January 1937, he served as road supervisor on the Iowa division, then becoming assistant engineer on that division. He was advanced to division engineer in February 1938, and on March 16, 1942 he became assistant to the chief engineer at Chicago.

Elmer A. Johnson, who has been promoted to engineer of bridges of the Illinois Central (*RT&S*, Sept., p. 86), was born on December 15, 1897, at Rock



Elmer A. Johnson

Island, Ill. He attended the University of Illinois, graduating in 1922 with a Bachelor of Science degree in civil engineering. He entered railway service with the Illinois Central on October 4, 1923,

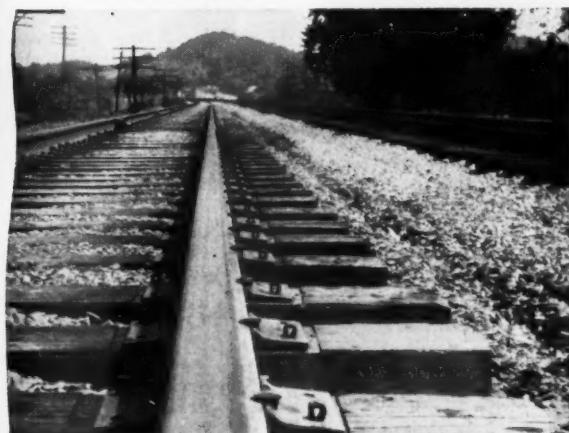
as a masonry inspector in the bridge department, being engaged in track-elevation work at Champaign, Ill. From October 1925 to January 1932 he served as a draftsman in the bridge department. He was then given a leave of absence to work as a structural engineer with various governmental agencies in Illinois, returning to the Illinois Central in November 1935 as a draftsman. In December 1942 he was promoted to assistant-chief draftsman, and in February 1945 he was advanced to chief designer in the bridge department. In August 1947, Mr. Johnson was made assistant to engineer of bridges, and in September 1952 he became assistant engineer of bridges, which position he held until his promotion.

Chester W. Collins, whose appointment as senior assistant division engineer on the Southern Pacific at El Paso, Tex., was announced recently (*RT&S*, Sept., p. 94), was born on January 9, 1911, at Seattle, Wash. He studied at San Mateo Junior College, Stanford University and through the University of California Extension Division, graduating from Stanford in April 1955 with a bachelor of science degree in engineering.

His first railway service was with the Pacific Electric Railway Company as a conductor in the transportation department, which position he assumed in January 1935. He later served as a motorman and terminal foreman in the

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- prolong life of ties
- save maintenance expense

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Railway Personnel (Cont'd)

transportation department. In January 1941, Mr. Collins became a junior engineer on the PE, serving in that capacity in both the engineering and maintenance-of-way departments. He was promoted to roadmaster in July 1942, and became chief clerk in the engineering department in November 1946. From September



Chester W. Collins

1949 to February 1954 Mr. Collins served as assistant engineer in charge of drafting, valuation and field engineering matters. At the end of this period he became assistant engineer maintenance and construction. He remained in the latter position until his recent appointment as senior assistant division engineer of the Rio Grande division of the SP.

M. Block, who has been appointed assistant to chief engineer of the Illinois Central (RT&S, Sept., p. 86), was born on July 17, 1891, at Omaha, Nebr. He graduated from the University of Colorado with a Bachelor of Science degree



M. Block

in civil engineering, and entered railway service on September 4, 1912, as a masonry inspector on the Illinois Central. In 1916, he became a draftsman in the valuation department, but shortly thereafter entered military service, returning to the same position in the valuation department in 1919. Three years later, Mr. Block became an assistant engineer in the bridge department, and in 1934 he was appointed chief draftsman in that

department. He was promoted to assistant to engineer bridges in 1944, and to engineer of bridges in 1947, which position he was holding at the time of his recent appointment.

Louis F. Racine, who has retired as chief engineer of the Monon (RT&S, Sept., p. 90), was born on August 29, 1890, at Des Moines, Iowa. He obtained his higher education at the University of Nevada, and entered railway service in May 1907 as a chairman on preliminary



Louis F. Racine

and location surveys on the Union Pacific. He later served as an instrumentman, levelman and transitman. Following a leave of absence to attend the university, Mr. Racine returned to the UP in 1915 as assistant engineer. He was advanced to assistant division engineer in 1920, to roadmaster in 1930, and to general roadmaster in 1938. He became division engineer in 1940. On January 1, 1948, Mr. Racine was appointed chief engineer of the Monon.

Track

R. N. Schmidt, assistant roadmaster on the Frisco at Springfield, Mo., has been promoted to roadmaster of the 54th track division, with headquarters at Ft. Scott, Kans.

M. L. Sacco, general foreman on the Chicago River & Indiana, has been appointed assistant supervisor of track on the New York Central at Chicago, succeeding **P. W. Siebert**, who has been transferred to Ashtabula, Ohio.

Cillas M. Correll has been appointed assistant track supervisor on the Southern, with headquarters at Birmingham, Ala., to succeed **J. E. Riddle**, who has been transferred, with the same headquarters. **John T. Marlowe**, track supervisor at Ludlow, Ky., has been transferred to Meridian, Miss., to succeed Mr. Correll.

J. H. Dame, Sr., track supervisor on the Illinois Central at Durant, Miss., has retired, and **Willie Morrison**, assistant supervisor track, has been promoted to supervisor track to replace Mr. Dame. **M. L. Atkins**, assistant supervisor of track, has been promoted to supervisor of track at Mendenhall, Miss., succeeding **G. E. Sanders**, who has been transferred to Hattiesburg. Mr. Sanders replaces **J. F. Long**, who has retired.

Charles S. Bray, whose appointment as track supervisor on the Erie at Warsaw, N. Y., was announced recently (*RT&S*, Sept., p. 94), was born on May 1, 1897, at Buffalo, N. Y. After a public school education, he entered railway service with the Erie on August 29, 1927. On March 1, 1928, he became a track foreman at Buffalo, and on May 15, 1943, he was advanced to general foreman at Susquehanna, Pa., later serving in the same position at Hornell, N. Y. Mr. Bray was promoted to track supervisor at Dunmore, Pa., on March 1, 1948, returning to the position of general foreman at Hornell on June 1, 1950. His reappointment as track supervisor, with headquarters at Warsaw, became effective on August 1, 1955.

C. G. Knight, supervisor track on the Pennsylvania at Terre Haute, Ind., has been transferred to Washington, D. C., to replace **D. A. Sempsrott**, whose promotion to assistant division engineer is noted elsewhere in these columns. **D. C. Ruschman**, supervisor track at Marion, Ind., replaces Mr. Knight at Terre Haute, and **C. G. Yund**, assistant supervisor track, has been promoted to supervisor track at Marion, to replace Mr. Ruschman. **H. Gessner**, assistant supervisor track at Aspinwall, Pa., has been transferred to the Panhandle division, to succeed Mr. Yund. **G. A. Terhorst**, junior engineer, has been promoted to assistant supervisor track at Aspinwall, succeeding Mr. Gessner. **W. J. Nicholl, Jr.**, supervisor track at Crestline, Ohio, has been transferred to Trenton, N. J., to replace **W. Glavin**, whose promotion to assistant division engineer is noted elsewhere in these columns. **J. G. Eannace**, supervisor track at Kane, Pa., replaces Mr. Nicholl at Crestline, and **G. C. Schrumm**, assistant supervisor track, has been appointed supervisor of track at Kane, replacing Mr. Eannace. **S. R. Weisenant**, assistant supervisor of track at Cleveland, has been transferred to Lyons to replace Mr. Schrumm. **J. D. Bays**, junior engineer, has been promoted to assistant supervisor of track at Cleveland to succeed Mr. Weisenant.

Special

H. L. Arbenz has been appointed special engineer-operations on the Chesapeake & Ohio at Richmond, Va. Mr. Arbenz joined the C&O as an inspector at Clifton Forge, Va., in 1911. His latest position was assistant engineer at Richmond.

Harrison O. Bush, tie and timber agent of the Erie, has retired after 37 years of service, and the position of tie and timber agent has been abolished. **Raphael R. Poux**, chief treatment inspector, ties and timber, has been appointed supervisor timber and treatment inspection, with headquarters as before at Marion, Ohio.

Obituary

O. A. C. Thorsen, chief engineer of the New York, Susquehanna & Western since 1945, died August 27 at the age of 52.

Association News

Northwest Maintenance of Way Club

The October meeting of the club will be held on the 27th at the Midway Civic Club, 1931 University avenue, St. Paul, Minn. There will be two speakers. R. W. Gustafson, bridge engineer of the Great Northern, will describe a bridge construction project near Anacortes, Wash., which involved the construction of concrete piers using the method in which the coarse aggregate is placed first and then grouted. This project included

Organizations

American Railway Bridge and Building Association—Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5. Next annual meeting, September 19-21, 1955.

American Railway Engineering Association—Neal D. Howard, Secretary, 59 E. Van Buren street, Chicago 5.

American Wood-Preservers' Association—W. A. Penrose, Secretary-Treasurer, 839 Seventeenth street, N. W., Washington 6, D. C.

Bridge and Building Supply Association—L. R. Gurley, Secretary, 201 North Wells street, Chicago 6.

Maintenance of Way Club of Chicago—S. Kosco, Secretary-Treasurer, 135 East Eleventh place, Chicago 5.

Metropolitan Maintenance of Way Club—Secretary, 30 Church street, New York.

Mississippi Valley Maintenance of Way Club—P. E. Odom, Secretary-Treasurer, Room 1008, Frisco Building, 906 Olive street, St. Louis 1, Mo.

National Railway Appliances Association—Kenneth Cavin, Secretary, 310 S. Michigan avenue, Chicago 4; Lewis Thomas, Assistant Secretary, 59 East Van Buren street, Chicago 5.

Northwest Maintenance of Way Club—L. C. Blanchard, Secretary-Treasurer, Room 27, Milwaukee Depot, Minneapolis 1, Minn.

Railway Tie Association—Roy M. Edmonds, Secretary-Treasurer, 1221 Locust street, St. Louis 3, Mo. Next annual meeting, October 26-28, Peabody Hotel, Memphis, Tenn.

Roadmasters' and Maintenance of Way Association of America—Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5. Next annual meeting, September 19-21, 1955.

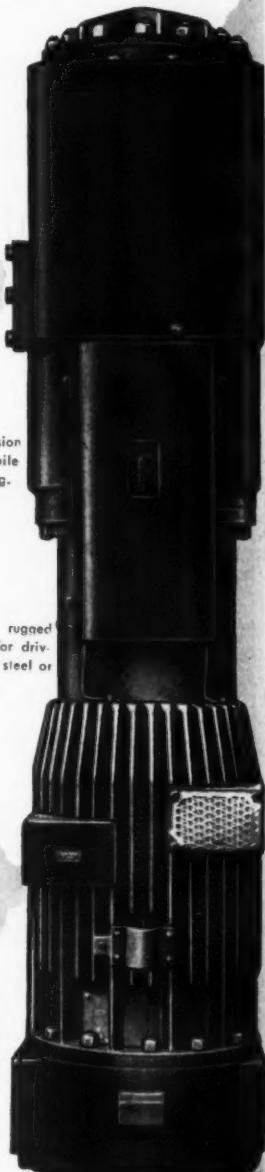
Track Supply Association—Lewis Thomas, Secretary, 59 E. Van Buren street, Chicago 5.

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from 5,000 to
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Association News (Cont'd)

the installation of a new 368-ft swing span which was erected at Seattle and floated to the bridge site. The other speaker will be C. H. Ferguson, regional engineer at Seattle for the Intrusion-Prepak Company, who will describe the construction of piers for a bridge at Mackinac Straits. Both talks will be illustrated by slides.

American Railway Engineering Association

An important step has been taken by the association in an effort to interest engineering students throughout the country in railroading as a career. This step consists of the preparation of a brochure entitled "The Railroad Field—A Challenge and Opportunity," which has been prepared by the Committee on Cooperative Relations With Universities. Printed in two colors, the brochure has 28 pages, profusely illustrated, with an eye-catching, futuristic, wrap-around cover. Advance requests for about 10,000 copies have been received from nearly 200 colleges and universities around the country. A total of 25,000 copies has been printed, and a plan of distribution has been worked out extending over a three-year period.

The brochures are available at a cost of .21 cents each (actual cost to the association) to railroads who may wish to

purchase them for use in their own engineer-recruitment efforts.

Four committees of the association have scheduled meetings to be held in October, as follows: Wood Bridges and Trestles, October 4-5, Forest Products Laboratory, Madison, Wis.; Wood Preservation, October 25, Peabody Hotel, Memphis, Tenn.; Cooperative Relations With Universities, October 20-21, University of Illinois, Urbana, Ill.; and the Special Committee on Continuous Welded Rail, October 31, at Chillicothe, Ill. to witness production of electric flash welds on the Santa Fe (tentative).

Railway Tie Association

The annual convention of the association will be held on October 26-28 at the Peabody Hotel, Memphis, Tenn. A number of addresses of particular interest to railroad men will be presented, including the following: "Procuring Crossties for 30,000 Miles of Track," by H. Britton, general tie and timber agent, Canadian National; "Combined Seasoning and Treating Process for Crossties," by G. M. Magee, director of engineering research, Association of American Railroads; "A Progress Report on Hickory Crossties," by F. S. Shinn, assistant tie and timber agent, Nickel Plate; "Santa Fe's Experience with Hickory Ties," by L. C. Collister, superintendent treating plants, Santa Fe; and "Class I Crosstie Requirements in 1956," by M. H. Dick, Editor, *Railway Track and Structures*. The annual luncheon on October 27 will be addressed by H. J. McKenzie, president, Cotton Belt.

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turing Company, Milwaukee, Wis. **Ervin M. Shepard** has been appointed chief engineer of the same division. Both will have headquarters at the company's main office in Milwaukee.

A native of San Francisco, Mr. Rushmer studied at the University of Cincinnati, and during World War II he joined the U. S. Navy V-12 program, and as part of the program attended five different universities. After receiving his commission, Mr. Rushmer taught



John R. Rushmer

diesel engineering to naval and army officers at North Carolina State College for a year. After his discharge in 1946, he returned to the University of Cincinnati for his degree in mechanical engineering. Following graduation in 1948, Mr. Rushmer joined the engineering department of Nordberg's Railway Equipment Division. In 1952, he also became active in the administration of the firm's junior engineering training program.

Mr. Shepard was born in Milwaukee and, after studying for several years at Marquette University College of Engineering, he enrolled in the cooperative training program at Nordberg, spending two training periods with the four-cycle

Supply Trade News

Personal

Joe W. Morgan, assistant sales manager, eastern industrial truck division of **Hyster Company**, at Danville, Ill., has been promoted to sales manager of the eastern tractor equipment division, at Peoria, Ill.

Robert G. Bielenberg, manager of transportation service, **National Aluminate Corporation**, has been named assistant vice-president of the transportation division.

Heyl & Patterson, Inc., has appointed **George M. Meriwether**, Birmingham, Ala., as sales representative in six southern states for special materials handling equipment, including H. & P. coal and ore bridges and railroad car dumpers.

Erskine Fraser has been appointed sales representative for the **L. B. Foster Company** at Atlanta, Ga. He will handle sales of the company's products in the southeastern states.

John R. Rushmer has been appointed assistant to the manager of the Railway Equipment Division, **Nordberg Manufac-**



Ervin M. Shepard

engine division and one period on the main diesel erection floor. After receiving his mechanical engineering degree in 1948, Mr. Shepard joined the engineering department of the Railway Equipment Division.

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A new experience in snow removal — simply push the button and your Gravely Tractor is ready for the toughest snow removal job! . . . The only 5-HP Tractor offering a choice of Snowblower, Snowplow or Power Brush for snow removal —choose the tool to fit your particular job.

Too, this one tractor offers 23 attachments to choose from for year 'round grounds maintenance tasks. From 75" gang mowers to 48" Snowplow, the Gravely saves time and money all year!

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Trailer-mounted ONAN "CW" Electric Plant

5 or 10KW

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Here's real mobility in high-capacity electric plants. You can tow a trailer-mounted Onan "CW" as fast as a car will travel . . . anywhere a tractor can go. Fully-protected by heavy-gauge steel housing; stays on the job in any weather.

Onan "CW" Electric Plants are unusually compact, quiet-running and economical to operate; weigh only half as much as water-cooled plants of the same capacity. Powered by Onan two-cylinder, suction-air-cooled gasoline engines built with massive, long-wearing parts for continuous, heavy-duty service.

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Supply Trade News (Cont'd)

Jack McCann, manager of the Washington (D.C.) office of the LeTourneau-Westinghouse Company, Peoria, Ill., has been appointed government sales manager, with the same headquarters. He will direct the activities of the government sales department, including the Washington office. Jack Errion, advertising promotion supervisor, has been named sales promotion manager.

Arthur H. Ringholm has been appointed manager of railroad sales for Kaiser Aluminum & Chemical Sales, Inc., with headquarters in Chicago. Mr. Ringholm will be responsible for the development and execution of a sales program directed toward increased use of aluminum by the railroad industry.

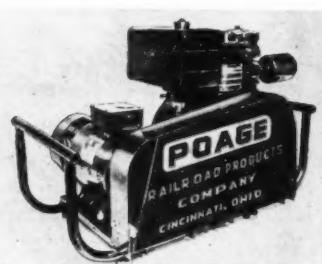
Two additional sales representatives have been added to the staff of the Agricultural Sales Division of Pacific Coast Borax Company. Joseph S. Golland has been assigned to the company's office at Chicago where he will handle weed control and other products of the division in a portion of Illinois, Indiana and lower Michigan. Elmer H. Schmierer has been appointed sales representative in the division's district office at Kansas City, Mo. He will do sales contact work in Nebraska and Missouri.

Obituary

Harry D. Shaw, railroad service representative for National Aluminate Corporation, died recently.

New Products (Cont'd)

(Continued from page 73)



PORTABLE GENERATORS

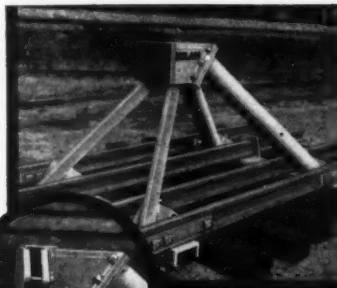
A line of portable electric generating plants is being introduced into the railroad field by Railroad Products Company, Cincinnati, Ohio. Bearing the familiar trade name "Poage," these plants are available in four sizes—2000, 3500, 6500 and 10,000 watts. Powered by Wisconsin air-cooled engines, the plants are available with manual starting, and those of 3500 watts and larger may be had with two-wheel transporting trailers.

(Continued on page 86)

New! NOLAN BUMPING POSTS

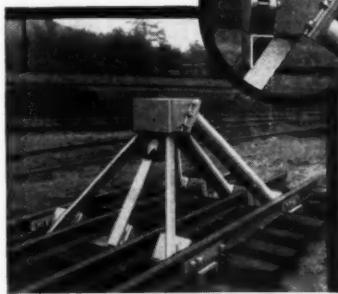
Quick and harmless dispersal of force from heavy blows is accomplished through the combination of bar tension members and tubular compression members.

The use of tubular compression members is recognized as the best engineering practice for load and shock strength. The bar and tube members are high carbon steel. Alloy bolts provide strong anchoring.



The loop plates anchoring the tube members on the middle rails is a NOLAN feature for added strength. Standard on all models. Rubber head, supplying added shock absorbing capacity, available at extra cost. Rubber is 2 inches thick. 40 Durometer.

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The sturdy arch type design with extra wide plates and bracing will resist the thrusts of the heaviest equipment.

Simplify your installations by using The Q & C One-Piece Manganese Steel Guard Rail, also speed up the work of laying rail through turnouts.

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New York 6

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St. Louis 1



To determine the relative performance characteristics of five competing open gear lubricants, a major steel producer established the 4-Gram Test . . . an experiment which reproduces as closely as possible service conditions encountered in open gear lubrication.

In this experiment the Timken Testing Procedure was modified slightly to reproduce more precisely actual service conditions. Flow of lubricant to the hardened and ground steel block and cup was cut off, and 4 grams of the lubricant being tested were applied at room temperature. The machine then was set in motion and watched closely for signs of scoring.

Five lubricants, all accepted by industry as "good quality," were tested. Results showed that LEADOLENE KLINGFAST gave over $3\frac{1}{2}$ times the service of the next best lubricant and up to 6 times the service of the other lubricants tested.

In testing and in actual service LEADOLENE KLINGFAST—with its "Indestructible pH-ilm strength" of 50,000 psi—provides you in two ways: from lowered lubrication costs due to less frequent application, and from greater service life of machinery being lubricated.

Results OF 4-GRAM TEST

LEADOLENE KLINGFAST—30 minutes—without scoring or failing.

LUBRICANT "A"—5 minutes—a high grade compound scored at 5 minutes and failed in 12 minutes.

LUBRICANT "B"—8 minutes—a reputable lubricant of residual nature scored and failed in 8 minutes.

LUBRICANT "C"—6 minutes—a good lead compounded extreme pressure lubricant scored and failed in 6 minutes.

LUBRICANT "D"—6 minutes—a lead-compounded lubricant scored and failed in 6 minutes.

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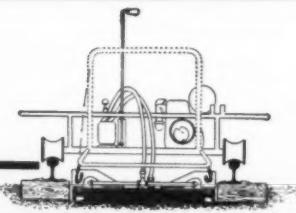
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NO MORE JACKING UP TRACK!

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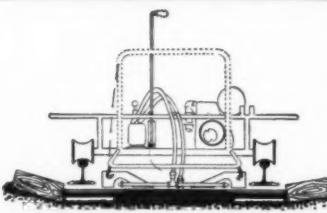
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**NOW ELIMINATES SLOW,
COSTLY METHOD**

After the tie has been cut on both sides by the WOOLERY Tie Cutter, the operator of the Tie-end Remover—(who follows closely behind so that operators can assist each other in removing machines from track)—lifts the center section out with tie tongs.



A double-ended hydraulic cylinder is then lowered into the tie bed. A simple turn of the valve moves these two pistons outward, pushing the tie-ends completely clear of the rail—whether



working with single or double shoulder tie plates! The crib is now open—and only the necessary amount of ballast is removed to admit the new tie.



Use the WOOLERY TIE-END REMOVER in conjunction with the improved model NU WOOLERY TIE CUTTER! It's the *perfect team* for greater savings on tie renewals—and gives smoother, safer track, too!

The trend toward heavier rail and double shoulder tie plates has made removing tie-ends increasingly difficult. With the WOOLERY Tie-end Remover, this task can now be done in less than a minute by one man with no more effort than that required to turn a valve!

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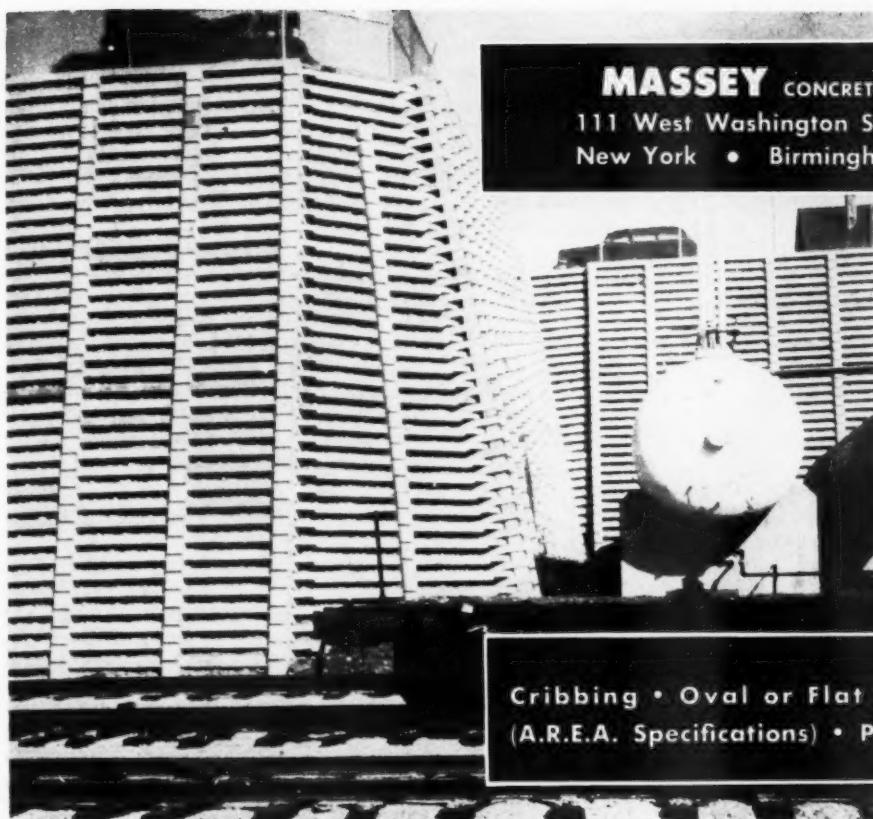
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Manufacturers' Literature

Following is a compilation of free literature, pamphlets and data sheets offered by manufacturers to the railroad industry. Circle the number(s) on the coupon below to receive the desired information. Requests will be sent direct by manufacturers.

1. **TWIN CRAWLER TRACTOR.** *Euclid Div. General Motors Corp.* 4-page 4-color catalog (601) describes, illustrates and gives specifications for the Euclid TC-12 Twin Crawler Tractor powered by two 194-hp. diesels; photos show typical uses.
2. **WELDING EQUIPMENT.** *Air Reduction Sales Co.* 16-page 2-color catalog (2350) "Aircomatic Welding Equipment" illustrates and describes welding equipment for Airco's inert-gas-shielded metal arc welding process; manual and automatic units along with accessory apparatus and welding wire are included.
3. **RUBBER PRODUCTS.** *Railroad Rubber Products, Inc.* Comprehensive, 54-page "Track Handbook" describes and fully illustrates railroad rubber products for engineering, bridges, roadways and signals; products covered in booklet's eleven sections include: track joints, crossings, bridges, tunnels, curves, scales, special track structures, elastic liquid rubber coatings.
4. **AIR-LINE LUBRICATORS.** *Ingersoll-Rand Co.* 8-page 2-color bulletin (4169) "I-R Air-Line Lubricators For Rock Drills and Air Tools" describes, illustrates, gives specifications and selection chart on I-R Air-Line Lubricator (sizes range for use with smallest handheld air tools to largest quarry-type drills).
5. **COAL TAR COATING TAPE.** *The Tapecoat Co.* 4-page brochure describes and illustrates how to get greater coverage from protective coating at lower costs in safeguarding pipe, pipe joints, fittings and couplings with Tapecoat-X coal tar coating in tape form.
6. **MORTAR CEMENT.** *Universal Atlas Cement Co.* 24-page profusely illustrated booklet "Build Better Masonry With Atlas Mortar Cement" describes and shows typical jobs accomplished with Atlas Mortar Cement, a single cementing material; sections give recommended practice covering materials, proportioning, mixing, laying of units and handy reference tables.
7. **OVERHEAD TRAVELING BUCKET CRANES.** *Blaw-Knox Co.* 8-page folder (2510) "Bulk Materials Handling With Overhead Traveling Bucket Cranes," with photos and diagrams illustrates relationship between preferred or required direction of bucket opening, flow of material, and position of drums in crane trolley.
8. **DIESEL ENGINE.** *International Harvester Co.* Booklet describes, illustrates and gives full specifications and performance charts on the International UD-525 six-cylinder, four-cycle diesel engine with a compression ratio of 15.4 to 1, capable of developing 115-hp. at 1800-rpm; includes listing of available attachments.
9. **TRACTOR SHOVEL.** *Frank G. Hough Co.* 4-page 3-hole punched folder (273) describes, illustrates and gives specifications for the Model HRC Payloader with torque converter; cross-sectional drawing gives dimensions with standard bucket; includes in-action photo and operational diagram.
10. **PORTABLE CORDS.** *Anaconda Wire & Cable Co.* 8-page 2-color brochure (DM-5538) describes, illustrates and gives specifications for "Anaconda Portable Cables." Securityflex for rugged applications, Industrial for severe industrial uses, Service for hard service applications; includes properties and applications.
11. **INDUSTRIAL FIBERS.** *The Pacific Lumber Co.* 4-page folder (502) "Palco Industrial Fibers" describes, illustrates and gives industrial applications and physical and chemical properties of 4 Palco industrial fibers produced from redwood and redwood bark; samples of each fiber included.
12. **BABBITT METAL.** *Graphitized Alloys Corp.* 4-page brochure announces and describes the graphite-containing lead-base babbitt "Grac"; describes 10 outstanding advantages; includes proven uses, outline of proper use, outstanding properties, composition and mechanical properties.
13. **TEMPERATURE INDICATORS.** *Tempil Corp.* Revised 6-page 2-color catalog (541) describes and illustrates complete line of crayons that tell temperatures; discusses how crayon mark melts when desired temperature is reached; contains concise directions for use.
14. **SCREW MACHINE PRODUCTS.** *Abbott Products, Inc.* 4-page folder "Abbott for Precision, Quality, Service" describes and diagrams Abbott industrial fasteners, hardware specialties, screw machine products and special screws; engineering drawings included.
15. **HYDRAULIC CRANE.** *Austin-Western Co.* Complete Gould Certified Report N.5508 gives case history report of use by Western Maryland Railway Co. of rubber-tired 4-wheel drive Austin-Western hydraulic crane.
16. **FIREPROOFING.** *The Zone Company.* Information, samples and engineering data offered on: (1) Libby-Zone Process of heavy-duty coating for bridge deck fire protection; (2) Zone Fireplate fire retardant coating for protecting vertical portions of wooden structures against brush and grass fires; and (3) Zoner self-contained and self-sealing Tie Shield. (Please specify by number which special data is required.)

Reader Service Department

Railway Track and Structures

30 Church Street, New York 7, N. Y.

Please send literature circled below:

1	2	3	4	5	6	7	8
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Also, please send me product information on the following (show product & page number):

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City

Zone

State

October, 1955

New Products (Cont'd)

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All the units have belted construction which is said to permit operation of the generator at 3600 rpm while the engine operates at the manufacturer's recommended speed.

This type of construction is said to assure smoothness and dependability of operation and quick service in the field.

The illustration shows the 3500-watt plant, which has a net weight of 273 lb. This unit is said to provide the full 3500 watts at continuous duty with ample intermittent overload capacity.

STUD DRIVER

A NEW DOUBLE-BARRELED power-actuated tool for the driving of studs into steel and concrete has been announced by the manufacturer, Remington Arms Company, Inc., Bridgeport, Conn. This new tool, to be known as the Remington Model 455 Stud Driver, has two interchangeable barrels which are said to be quickly removable and replaceable and combine to adapt the tool to standard and heavy-duty jobs.

The new Model 455 is an improvement on the older Model 450 Stud Driver which used the controlled blast of a 32-caliber blank cartridge to hammer nail-like studs through structural materials. The interchangeable barrel feature of the new model is reported to permit the use of a number of different "power loads" thus delivering impacts of varying force. This versatility is said to have permitted the design of power loads for proper penetration, of alloy-steel studs of specific diameters, lengths and purposes, in various structural materials.

Model 455 accommodates 25 types of 1/4-in studs in lengths ranging from 1 in to 3 1/4 in, or 12 types of 3/8-in studs in lengths of 1 1/2 to 4 1/4 in. The tool cocks only when depressed against the work.

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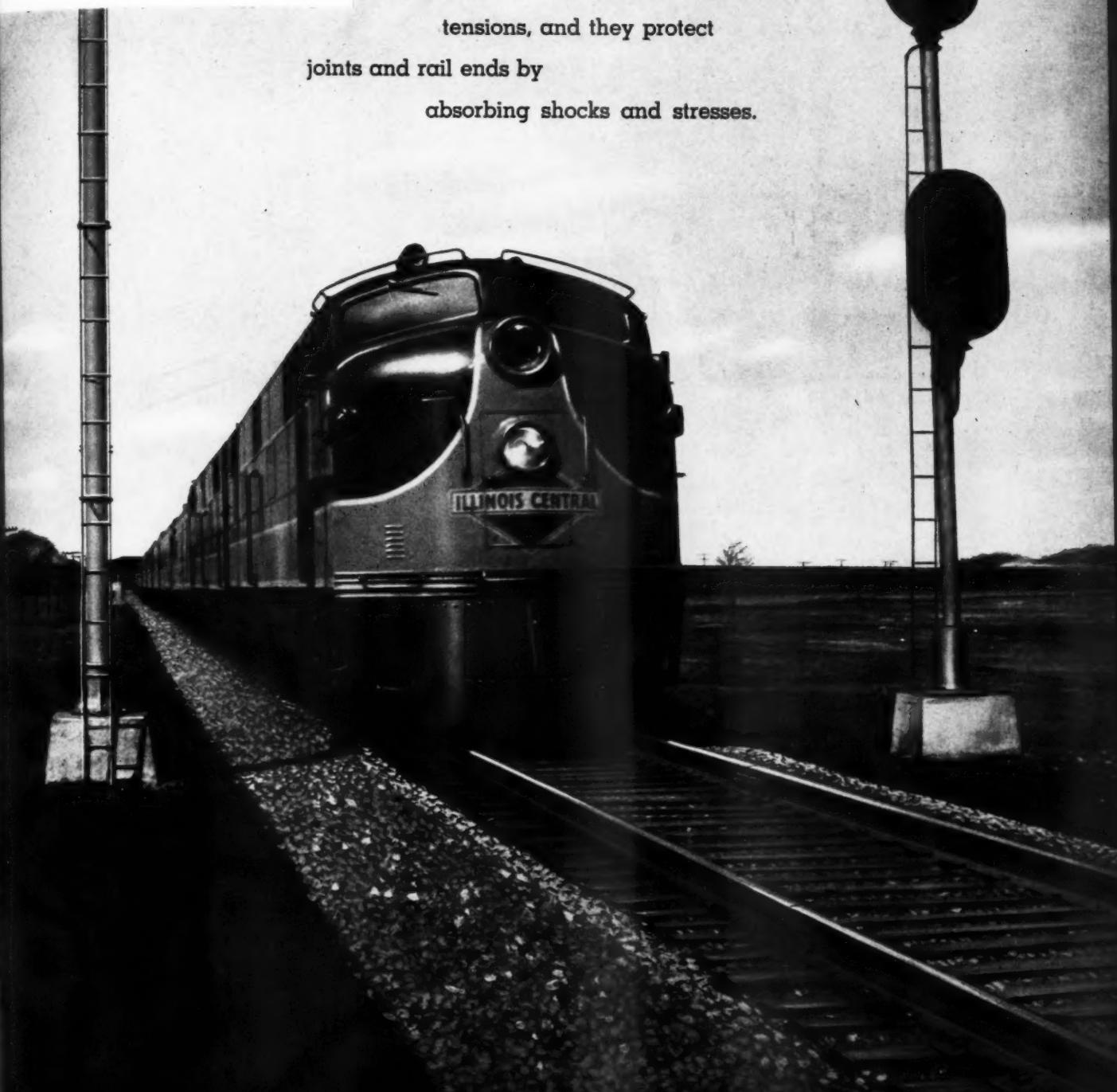


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IMPROVE TRACK

A good way to reduce maintenance costs is to use our tremendously powerful railway spring washers.

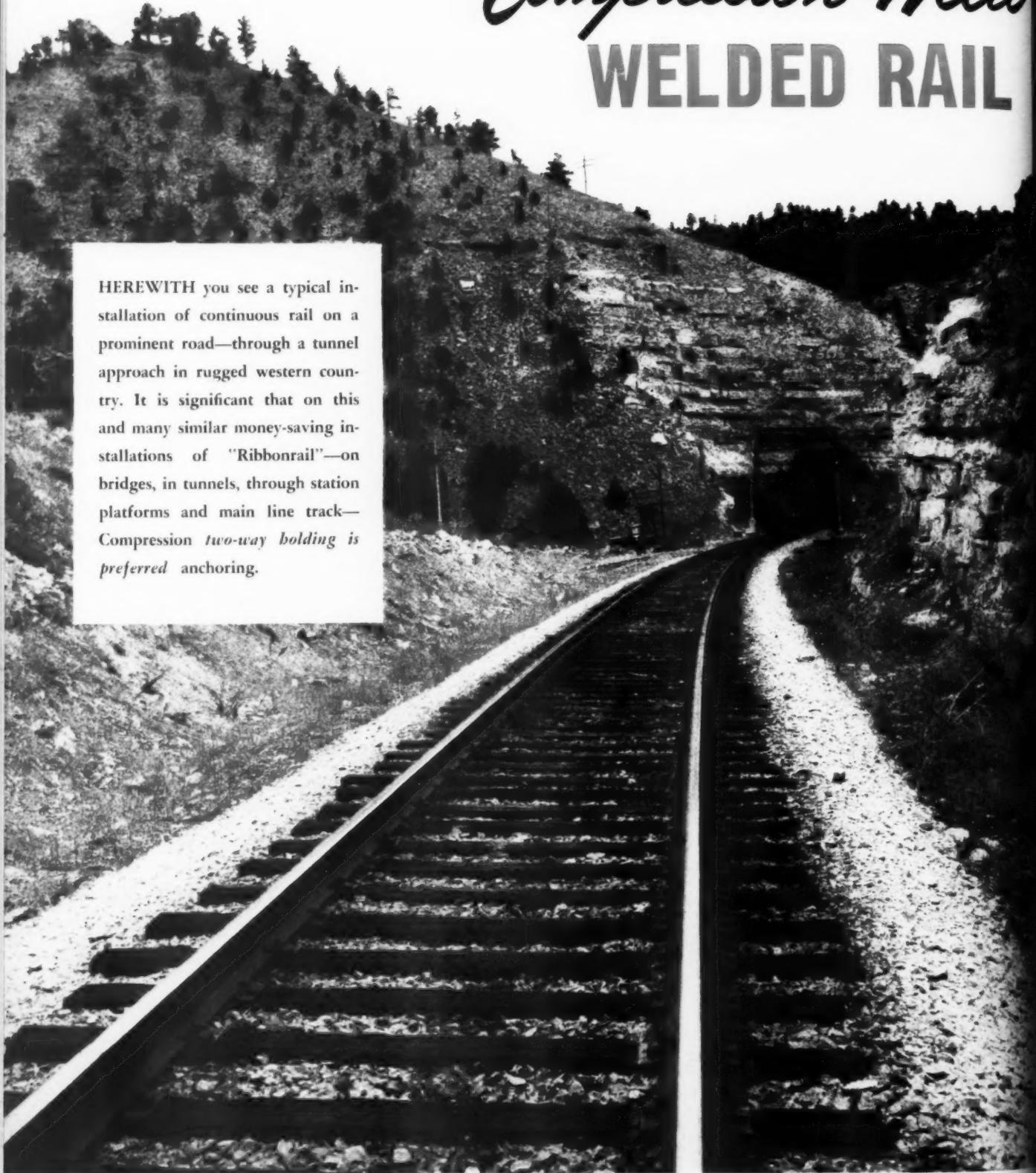
They give enough reserve power to maintain bolt tensions, and they protect joints and rail ends by absorbing shocks and stresses.



THE NATIONAL LOCK WASHER COMPANY, NEWARK 5, N. J., U.S.A.
A COMPLETE LINE OF RAILWAY SPRING WASHERS

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